American Artisan and Hardware Record

Sheet Metal Work - Warm Air Heating

Vol. 94, No. 26 — CHICAGO, DECEMBER 24, 1927 — $2.00 Per Year

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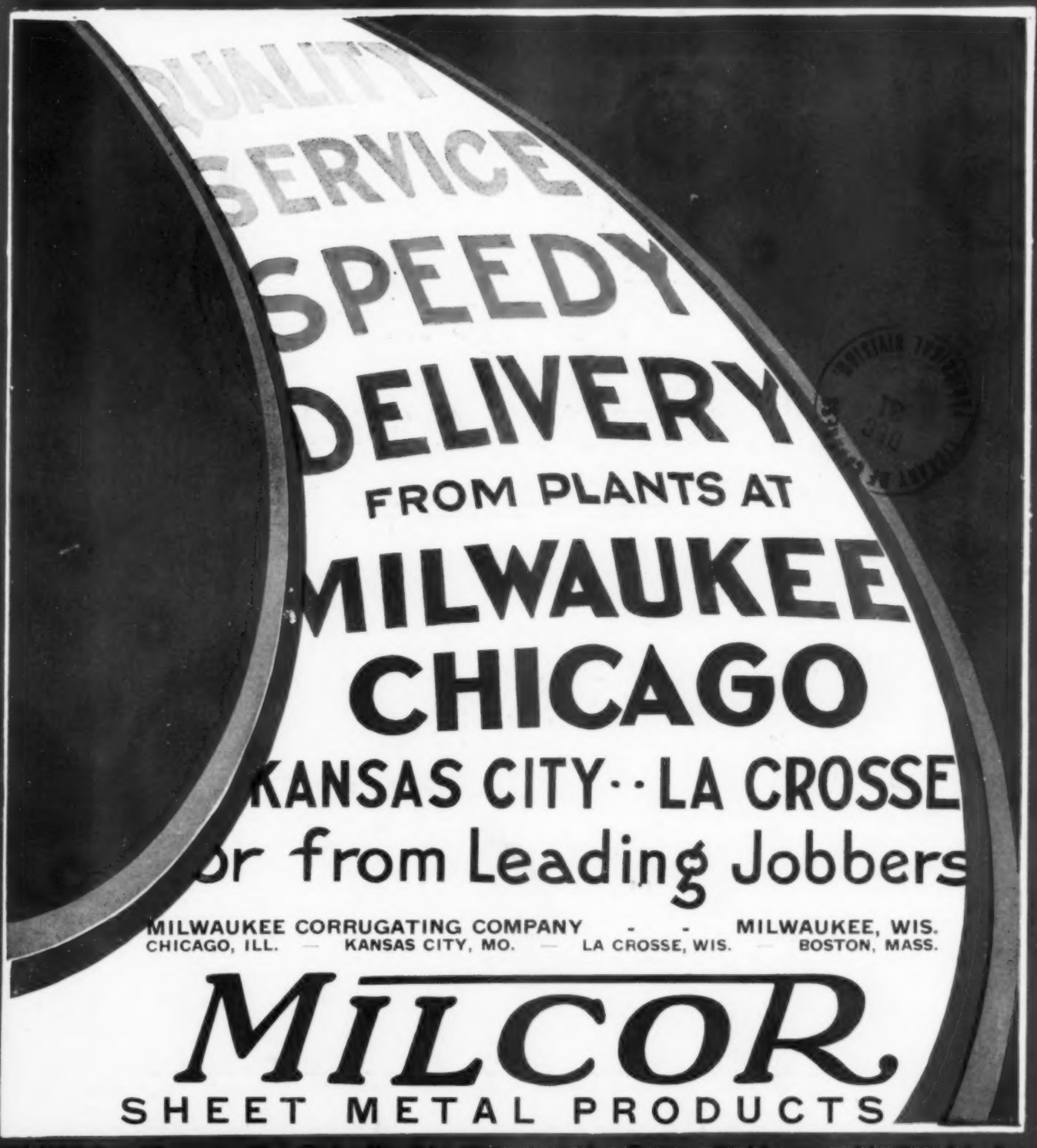

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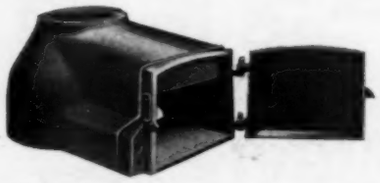

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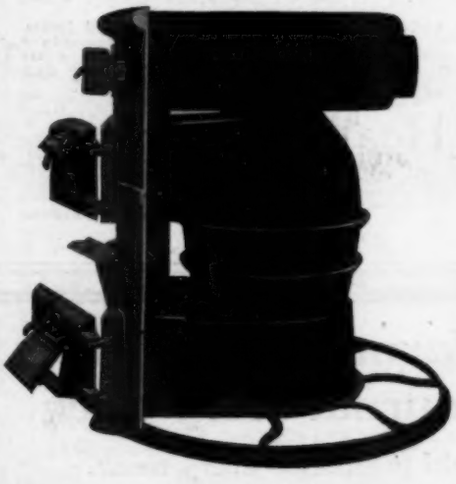

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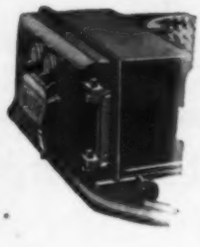

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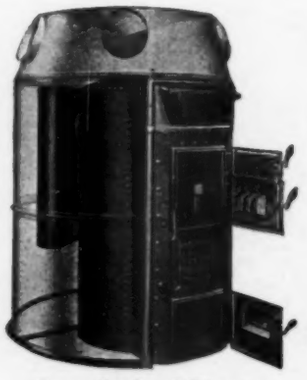

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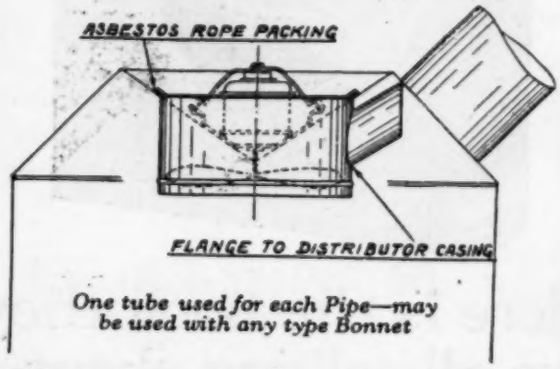

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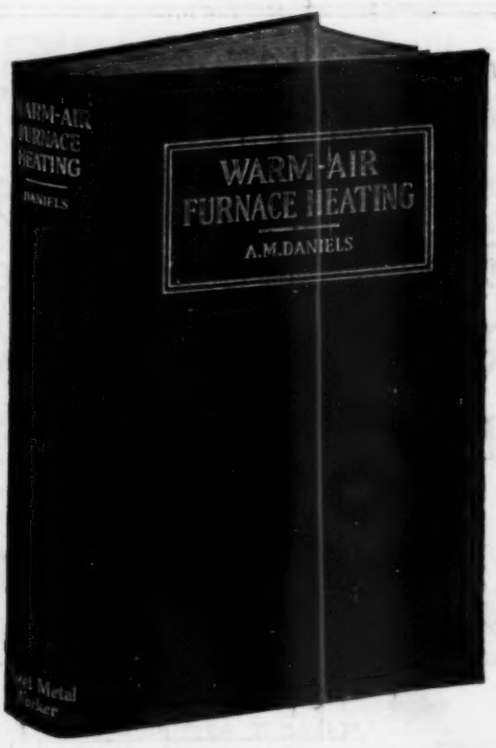

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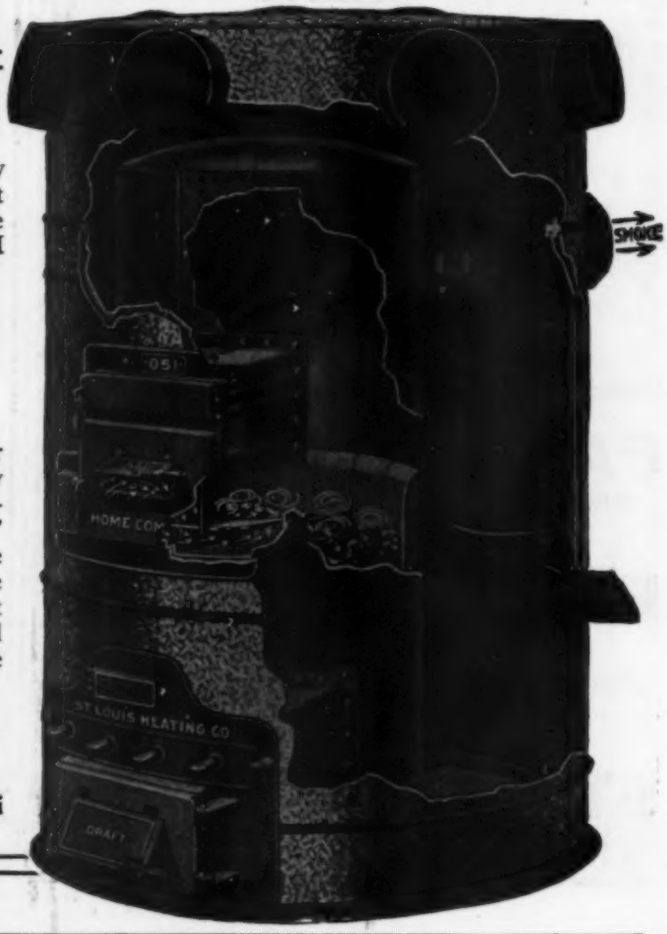

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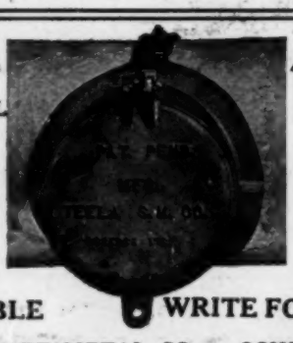

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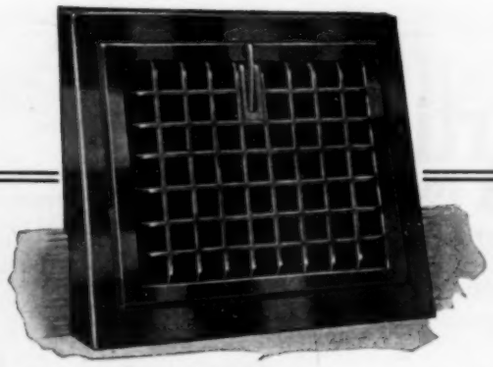

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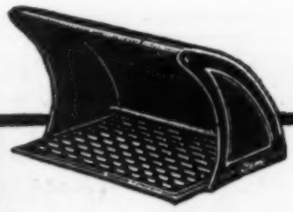

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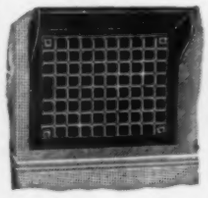

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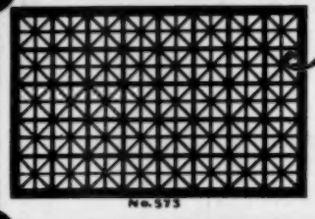

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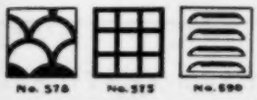

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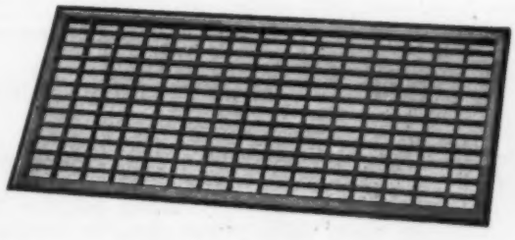

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Table of Contents

	Page
Sheet Metal Department	155 to 165
Building Metal Garages Becomes Important Work of Progressive Sheet Metal Man	155
Modern Acetylene Blow Torch Convenient for Soldering and Brazing	156
Prosperity in Prospect for 1928 Says Continental National Bank of Chicago	157
Architectural Cornice Work Has Long Interesting Development History, by O. W. Kothe, Principal St. Louis Technical Institute	159
Farm Ventilation Requires Use of Several Types of Ventilators, by A. J. Mack	162
Is Your Name Among This List of Indianians? If So, You Have Work	164
Random Notes and Sketches, by Sidney Arnold	166
Warm Air Heating and Ventilating Department	167 to 173
Cutting Down the Fuel Bill (Part 2), by John S. Walker	167
Greater Chicago Warm Air Heating Association Big Aid to Industry	168
Rules for Burning Coal in Small Domestic Furnaces	170
Lennox Furnace Company Holds Group Sales Meetings	171
Improvised Motor Car Brings Bigger Business for J. C. Rummel & Son	172
Notes and Queries	173
Coming Conventions	173
Markets	174

PROFESSOR A. J. MACK ON FARM VENTILATION

Sheet metal contractors doing business in rural communities are constantly coming into contact with a demand for the construction and installation of ventilating systems particularly adapted to the ventilation of farm buildings. This demand leads to considerable complexity on the part of the sheet metal contractor because of the multi-varied employments of ventilation in this type of work. A cattle housing requires one type of ventilation, while a hay mow may need an aeration system entirely different.

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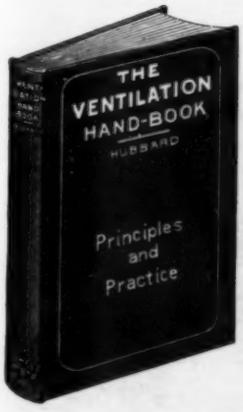

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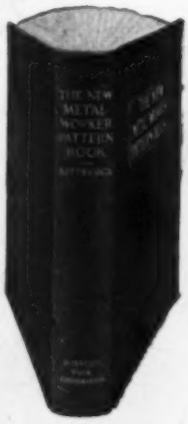

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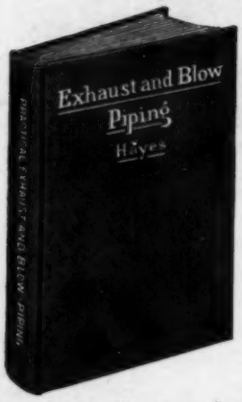

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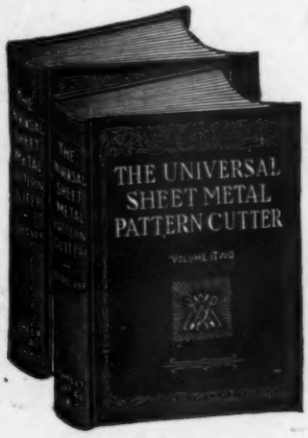

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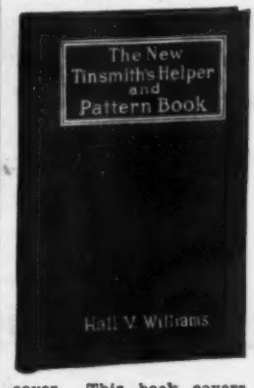

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ARMCO Ingot Iron

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The ARMCO Distributors Ass'n of America
Executive Offices, Middletown, Ohio

*Rust-Fire! The only difference between rusting and burning is time—both are oxidation. You can feel and see the fire produced by rapid burning. But when the metal rusts, the process is too slow to see. Rust is the "ash" of this fire.

ARMCO INGOT IRON
The Purest Iron Made

American Artisan and Hardware Record

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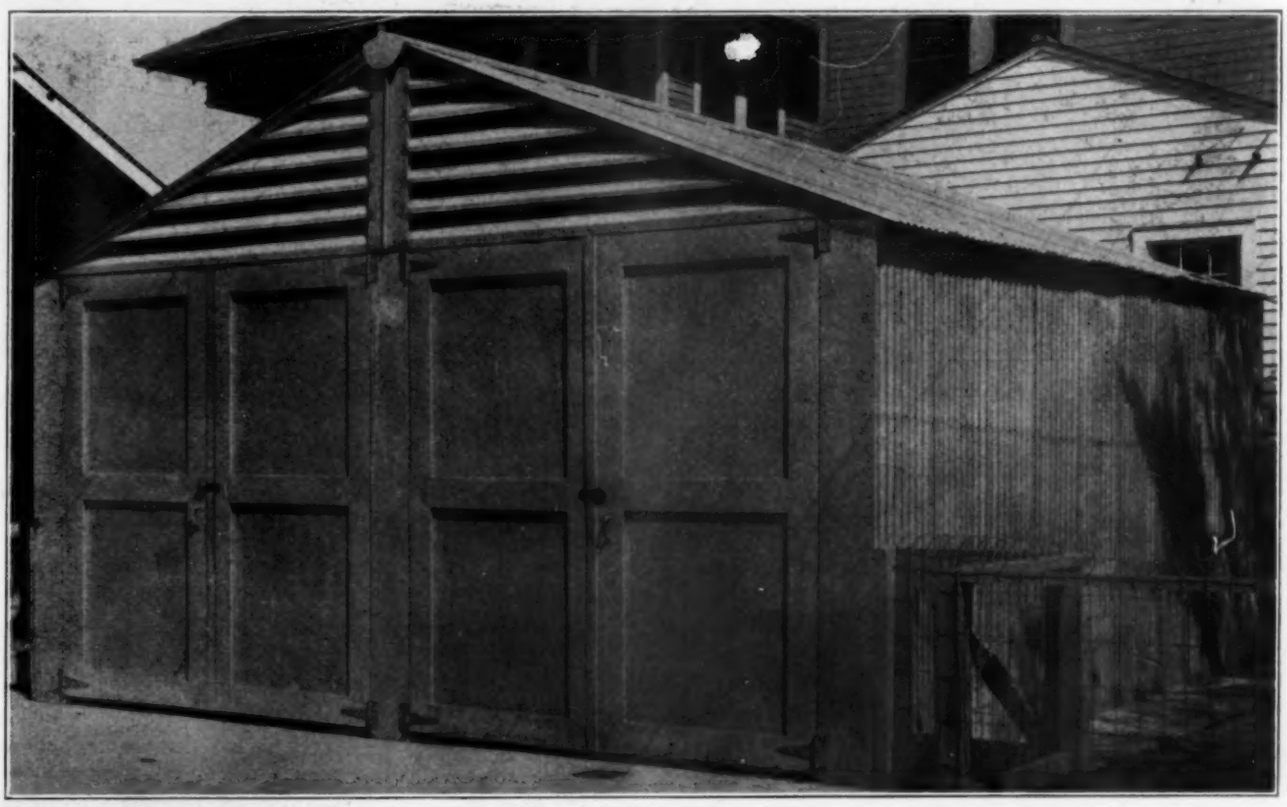


One Type of Sheet Metal 2-Car Garage the Sale of Which the P. H. Cotton Metal Works, New Orleans, Louisiana, Is Finding Considerable Added Profit, and They Are Easy to Manufacture

Building Metal Garages BECOMES IMPORTANT WORK of Progressive Sheet Metal Man

Many New Designs AID in Meeting ALL REQUIREMENTS of Home Owners

THE sheet metal garage had had a rather hard struggle for existence prior to tests that were made in Washington some time ago to determine just how far these materials are fire resistant and just how far they could be depended upon to confine a fire within their own limits.

Since then, however, this type of garage has taken on a new importance and consequently many sheet metal contractors are finding them easier to sell than has been the case at any previous time. New and attractive designs developed by the Sheet Steel Trade Extension Committee have brought the sheet steel garage to the attention of the owners of homes not only in the lower and medium-priced class, but of the owners of the real expensive homes that are show places in their several communities.

The accompanying illustrations show two designs of sheet steel garage that were cut out and erected by the P. H. Cotton Metal Works, 4628 Bienville Avenue, New Orleans, Louisiana.

These garages are manufactured from sheet steel. One, not shown in the illustration, a simple 9x18-foot structure, another a double garage 18x18 feet, and the third a multiple garage for four or more cars, 10x18 feet. The structures are ventilated the entire width of the building to permit the gas and fumes to escape when the engines of the automobiles are left running in the garage. This also makes a very cool arrangement

Multiple-Car Garage Made Entirely of Galvanized Sheet Metal by the P. H. Cotton Metal Works, New Orleans, Louisiana. Note Sturdiness of Construction

for a garage in this climate, as they have very long, hot summers in that section of the country.

These garages are made of 26-gauge corrugated galvanized iron sheets for the side walls and roof, with interlocking 1-inch round seams. The doors and door frames are reinforced with wooden cores covered with galvanized iron. They are paneled in form and reinforced at each corner on both sides before lining the frame. This makes a door that will stand hard usage.

The hardware used on the doors is as follows: Eight-inch extra heavy galvanized tee hinges with brass pins that will not get rust-bound, a 6-inch chain bolt and a hasp lock and galvanized iron handles.

The frame for the garage is made of 1½x2x⅛-inch carbon steel, painted before erection. All bolts are galvanized lead headed. Galvanized clinch nails are used in securing the roof sheets to the perlins.

The accompanying photographs are used by the P. H. Cotton Metal Works for getting customers for their garages. About 90 per cent of the prospects solicited are landed because of the fact that the company is able to meet almost every requirement regarding size, shape or design of garage.

Modern Acetylene Blow Torch Convenient for Soldering and Brazing

Fire Hazard Is Reduced Since No Liquid Fuel Is Used

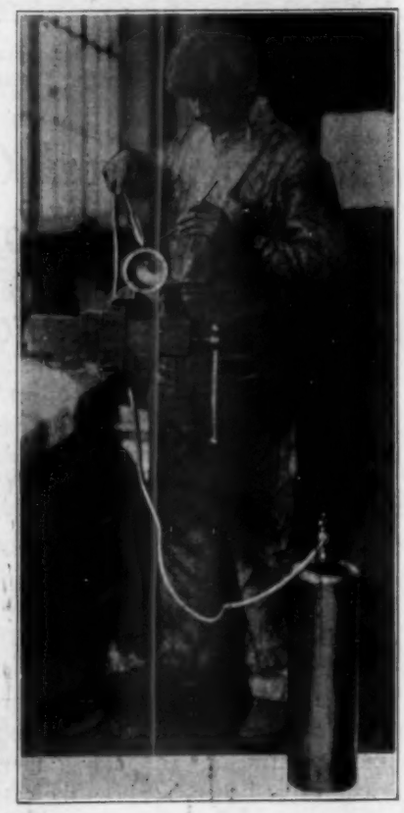
THE oxy-acetylene flame provides an easily manipulated source of intense heat which is used in welding and other heating operations where extremely high temperatures are required. There are, however, many other industrial heating applications, such as soldering and brazing, where a lower flame temperature can be used to advantage. With burners designed for the admixture of atmospheric air, acetylene alone will give a flame hot enough for many purposes.

The small gas tanks that have for years been almost universally used for truck and motorcycle lighting have also found many applications in the industrial field.

An inexpensive outfit has been developed consisting of a light blowpipe handle and a set of special tips giving flames suitable for a wide range of work. The outfit is most conveniently used with a small gas tank, the same as is used on a motorcycle or truck, and a 6-foot length of hose.

Small furnaces for heating lead, paraffine, and the like are also manufactured.

Acetylene has distinct advantages



over liquid or other gas fuels. It not only produces a higher flame temperature than gasoline and coal gas or natural gas, but forms a flame that is non-oxidizing and non-carbonizing and can be perfectly controlled. Fire hazard is reduced, since no liquid fuel is required.

An outstanding advantage of the outfit is its complete portability and it gets into action immediately. No preheating is required. It is necessary only to turn on the gas, light the torch, and the job is under way. The gas can be turned off between jobs.

Charging plants supply gas exchanges through jobbers and distributing stations throughout the country. But a moment is required to trade an empty tank for a full one. Only the gas content of the cylinder is paid for since no rental charge is made for the use of tanks.

Soldering may be done either with one of the tips, or the blowpipe may be converted into a soldering iron by slipping the soldering copper over the end of the blow-torch tip and tightening a single setscrew. It can be maintained at the right temperature by the internal flame. Work does not have to be stopped to reheat or change the iron.

The unit is especially liked by electricians for work on poles or underground or in any inaccessible place. It works equally well in any position and can always be lighted without inconvenience.

In plant maintenance and production processes, where even slight delays are costly, the high temperature flame is found to do the work faster than other heat sources and time spent in preheating and refilling with liquid fuels is saved.

In laboratories the neutral character of the flame is important for many applications. Railway signal divisions have inspection cars equipped with blow-torch units and floodlights, using the same fuel, for emergency work at night.

In the shop and in the field new uses for the unit are being constantly found. Due to its convenience, reliability, and more intense heat, it is found to be a time saver in almost all lines and it is rapidly replacing old style soldering and brazing outfits and blow-torches.

Painters use it for burning off paint, the marble industry uses it for removing tool marks and stains, shoe factories use it for singeing, boaters, campers and cottagers use it for cooking.

It is literally "the gas of a thousand uses."

PROSPERITY IN PROSPECT for 1928 Says Continental National Bank of Chicago

Sets Forth Reasons for Improbability of Boom During Coming Year

DEPRESSION, boom or a continuation of "mere prosperity"—which of these will be recorded by the first six months of 1928?

We find absolutely no evidence of a coming period of depression. We do not anticipate business expansion of such proportions as to justify use of the word "boom." We do expect a continuance of generally prosperous business. And we don't mean "profitless prosperity," either.

Improbability of a Boom During First Half of '28

As we understand the term, a "boom" would mean an increase in industrial production, in trade, prices and profits of something like 15 or 20 per cent during the next six months. Such an increase in production and trade presupposes either a deficit in commodities much larger than we know about or the development of a foreign and domestic demand far greater than we have reason to expect. Even a 15 per cent increase in commodity prices suggests commodity speculation—a sudden reversal of the present attitude of conservatism in making future commitments. And incidentally, a 15 to 20 per cent increase in prices, if *not* accompanied by a corresponding increase in production and trade, would mean inflation. An increase in profits of the size suggested could occur if prices rose high enough and fast enough. But this is improbable.

All told, the possibility of a boom is so remote as to be dismissed summarily. And anyone who remembers 1919 and the unpleasant morning after of 1920 will be satisfied with "mere prosperity."

1927 Business Sets Standard for a 1928 Forecast

The year 1925 set a business record. Nineteen hundred twenty-six broke that record. Business this fall did not expand as was generally expected. But the entire year '27 will be better than '25 in nearly every particular. A year ago we erred slightly on the side of conservatism as to '27.

To make a forecast for the coming half year it is necessary to have some basis for comparison and it is submitted that 1927 figures well serve the purpose.

Domestic trade, as evidenced by car loadings, has thus far been 2.7 per cent less than in the corresponding period of '26, but 1.4 per cent more than in '25. Bank debits, indicating trade payments, have been 10 per cent higher than in '26 and 18 per cent higher than in '25.

Foreign trade through November has shown a favorable balance each month. Exports for the eleven months were 2.6 per cent larger than in the same period of '26, while imports were 5.3 per cent smaller. There was a net import of gold eight months, but a net export of 73 million in the three-month period following.

The average of industrial production—the output of factories and

mines—for 10 months has been less than 1 per cent below the index for '26. It is almost 4 per cent higher than in the same period of '25.

The index of employment in manufacturing industries through October averaged 3 points lower than in the corresponding period of '26, but unemployment has not been serious and wages have been maintained.

The total money income of the farmer we estimated, in the August number of this summary, at $12,150,000,000 for the crop year 1927. This was an increase over '26. We now feel that the estimate was too low and submit a new figure—$12,325,000,000.

Nineteen hundred twenty-six recorded the paradox of increasing production on a decreasing price level. But the 10 per cent price decline, starting in December, 1925, reached bottom in March and April of '27, and by October the price index had risen 3½ per cent.

Inventories Have Been Moderate

Figures can't be offered in proof that inventories generally have been moderate, but this can reasonably be inferred from the following facts: Production below the figures of '26; an increase in the price of manufactures insufficient to cause commodity speculation; a volume of trade large enough to move output smoothly; efficient transportation and conservative buying.

Credit has been plentiful throughout '27. The reserve ratio indicates a reservoir of credit in the reserve banks. Rediscounts have been lower than last year. But "all other loans and discounts" of member banks—evidencing commercial demand for funds—have averaged 2.3 per cent higher than in '26. The loan deposit ratio of member banks indicates that they are not in an extended position.

The number of new building permits was 8.3 per cent lower the first ten months of '27 than in the corresponding period of '26. The value of permits was 10.8 per cent smaller for the first ten months of this year. But other kinds of construction will equal or exceed the figures of last year.

Business failures, in number and liability, have been higher than in 1926.

Net earnings of industrial corporations, as nearly as we can estimate, are off some 7 to 8 per cent for the first nine months of '27, compared with '26. But in number of dollars, profits have been sizable. And when financial statements are available for the whole year, the returns will be at least as large as in '25, probably larger.

What Will Reserve Bank Monetary Policy Be?

The most disturbing question in making a forecast for the first half of 1928 is this: What will be the monetary policy of the reserve banks after the turn of the year?

The policy of lower rates, inaugurated in August, has checked the gold inflow into the United States and aided the Bank of England. For a long time the policy had been one of checking speculation in the domestic security and commodity markets. Will the new policy, related primarily to international conditions, be continued? Or will the recent increase in commodity prices and the rise in stock prices lead to a policy of higher rates?

Firmer rates would put pressure on business at home, affect adversely the exchanges of European countries, complicate the transfer of reparations later in the year, and might cause opposition from agricultural interests. But any tightening of money rates would not be enough to precipitate depression or result in a major downswing of security prices. And higher rates would soon cause a gold movement into the United States, leading in turn to easier money.

A Forecast for the First Half of 1928

For the first half of '28 we predict prosperity. The money income of the farmer is a beautiful backlog of purchasing power. The prospect is for maintenance of industrial employment and the sustained income of industrial workers will help to sustain business. The probabilities are that industrial production will at least be maintained at the present level and may very easily increase after the turn of the year. Moderate inventories point to this conclusion.

Easy money is our best guess and this condition always sustains business. Ease in the money market and moderate inventories make a sharp down-turn in commodity prices improbable. But continued conservatism in buying will prevent an over-rapid increase in prices. Adequate credit for any business need is assured. Easing off in the volume of new building is likely and desirable. Other construction will probably continue in volume.

A new record for security issues in 1927 suggests expenditures for labor and materials. Profits will be earned, truly earned, by efficient management. There will be variations in earnings, between localities, lines of business and individual concerns. There always are. But the degree of variation will depend largely on controllable factors of organization and management.

We feel that the business record for the first six months of 1928 should equal the average for the entire year 1927. It may be up to the figures for the first half of '27.

Prosperity is in prospect.

Friedley-Voshardt Company Designs New and Attractive Flower Box

The Friedley-Voshardt Company, 733 South Halsted Street, Chicago, has recently perfected a very attractive sheet metal novelty in the form of an ornamental flower box. These boxes are especially designed for beauty, practicability and durability, according to the manufacturers.

They are constructed of 1-inch select lumber, then covered with galvanized iron, sheet zinc or sheet copper, according to the specifications of the buyer. The new dies of the company make possible some really beautiful flower boxes which recall to mind some of the ornate designs that occasionally come from the old world.

~~Architectural~~ Cornice Work Has Long Interesting Development History

Cornice Work Now Going Forward at Rapid Pace After Slump

By O. W. KOTHE, Principal St. Louis Technical Institute

MANY sheet metal men interested in architectural cornice work and other ornamental trim work may have wondered where and how the knowledge of ~~Architecture~~ was built up.

It was the growth of the monastery of Education that we are largely indebted to for our present fund of architectural designs of classical antiquity. The monastery system was founded after this manner.

It was the monastic orders that gradually accumulated all the building knowledge they could gather, as well as to invent others as they went along. The countries in which they were situated were continually torn asunder by wars, so the monastic organization and the clergy were the only things that remained permanent. Any neighboring country that attempted to erect a monumental structure would have been regarded with the most suspicious jealousy by the lord of each neighboring fief. For this reason the religious orders were the first who could by themselves undertake important buildings.

Schools of Free Masons

It was after the fall of Rome that these monasteries began to be the schools, and one of their arts was building construction. During the transitional period, or the Romanesque period, the guilds of Free Masons increased in strength and power, until the building of the great cathedrals was entrusted to their hands entirely.

Observe, it was the graduates from the monastic schools governed by some Bishop or clerical authority, who formed a society called Free Masons. They established schools for the instruction—they furnished the artisans wherever a suitable structure was to be erected. This became a secret society exclusively for Masons and craftsmen as builders, much like our present unions—that duly qualified artisans may secure work in strange cities to the exclusion of impostors.

Masonry became a powerful secret order and the discoveries made in details of design and construction remained secrets with the craft. Observe, thus far it was a "Constructive order"; it built actual things, although it was controlled by the Church. Later in the fifteenth and sixteenth centuries, when extensive building programs were put into effect all over Europe, the building necessity demanded more masons than the guilds could produce. This led to a constant employment of outside men, who in time became experienced and who also demanded entrance into the guilds.

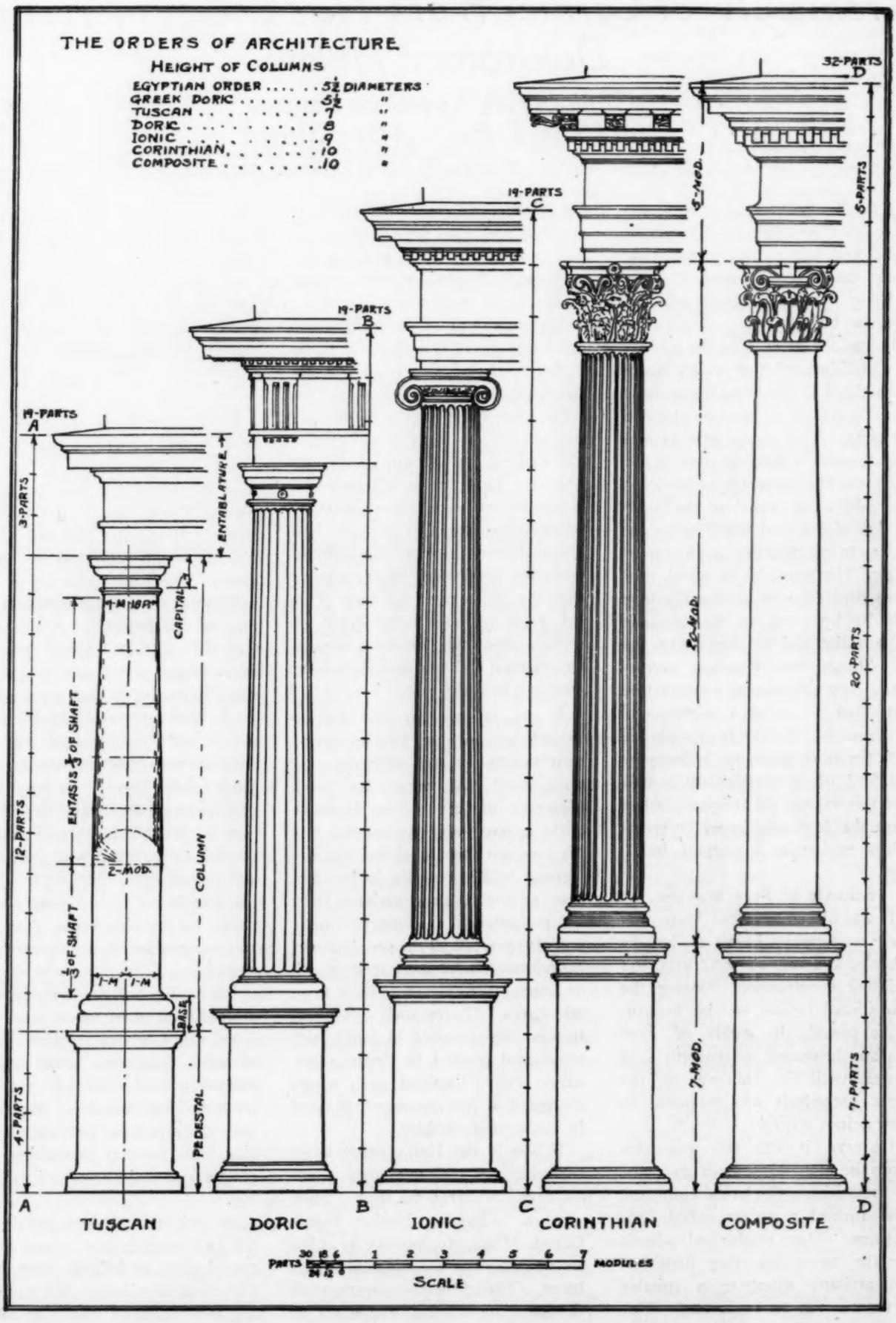
It was natural here that friction should develop, since two groups of men taught by two different systems could not agree for long. However, under the Free Masonry guild system every Archbishop was his own architect, and did the designing of his temples in his diocese, as well as drew artisans from his monasteries to construct them, and also pressed all the people under his control to contribute their wealth or actual labor to execute these huge structures. Under such conditions it was only possible to build such wonderful temples in France, Germany, Italy, England, etc., where the Spirit of Religion was expressed in houses of worship.

It was in the 15th century when the rebirth of building called "Renaissance" occurred in Italy. Each city, as Florence, Venice, Rome, Genoa, Milan, etc., sought to outdo its neighbor in monumental structures. Therefore the governments delegated prominent architects of the time to make research of all classical designs and examples of architecture. Such architects were Vignola, Palladio and others. Possibly the work by Vignola, who lived from 1507 to 1573, is commonly regarded as an authority, mainly for the accuracy and simplicity with which he sets down his work.

During the early part of last century, 1815, a very splendid work called the "Architecture Toscane" was printed, which consists of 110 plates. These may now be purchased from the "Pencil Point Press," which published the entire series. The same company is also publishing another monumental volume on "Fragments of Architecture Antique" in 100 plates. Possibly every sheet metal worker should make it a point to read a good book on History of Architecture. There are several such volumes, and possibly one or more can be secured at your public library. It may seem dry reading for a while, which is a sign the brain is heavy and sluggish to such things. But with practice it will limber up nicely, and it will be the forerunner to becoming a great reader of heavier books than love stories, murder stories, or sporting page news.

The only difference between architectural sheet metal work and wood, stone or clay products, is the material. The same details made of the more solid materials are also made in sheet metal, so fundamentally there is little difference in design, only possibly in making joint connections and manner of supporting.

In architectural sheet metal work the first moulding on record can be traced back to 1856 in New York City, where window sills and coping were made by hand. In 1857 a crown mould was made of sheet


THE ORDERS OF ARCHITECTURE
HEIGHT OF COLUMNS
EGYPTIAN ORDER . . . . . 52 DIAMETERS
GREEK DORIC . . . . . 5½ "
TUSCAN . . . . . 7 "
DORIC . . . . . 8 "
IONIC . . . . . 9 "
CORINTHIAN . . . . . 10 "
COMPOSITE . . . . . 10 "
19-PARTS
A
3-PARTS
ENTABLATURE
CAPITAL
1-M
18A
ENTASIS
⅓ OF SHAFT
12-PARTS
2-MOD.
⅓ OF SHAFT
1-M
1-M
BASE
4-PARTS
PEDESTAL
COLUMN
19-PARTS
B
19-PARTS
C
5-MOD.
20-MOD.
7-MOD.
32-PARTS
D
5-PARTS
20-PARTS
7-PARTS
A
TUSCAN
DORIC
B
IONIC
C
CORINTHIAN
COMPOSITE
D
PARTS 30 18 6 1 2 3 4 5 6 7 MODULES
24 12 0
SCALE

metal, while dentils of wood were covered with sheet metal. From here on an ever-increasing number of examples were brought into being and given prominence. In 1868 Mr. Hayes designed and put into use the first sheet metal skylight bar, which was formed by hand. Thus, side by side, two wonderful crafts were developing—that today are larger than ever before.

From about 1890 to 1910, or in that neighborhood, where architectural cornice work had its first growth, it shot up like a weed, every building was decorated with some sheet metal work, store fronts were very popular. But like in our youth, the first growth is always more radical, it is untied with few restrictions, then comes a period of mental development to catch up with the physical growth. After this a second growth takes place—often one that grows tall and broad, where again the body runs away from the brain. It is in this period where youth does not know its place, all such new and wonderful things are unfolding. But gradually the mind catches up with the growth of the body; the body ceases to grow, and a long period of development sets in.

Just so we have seen architectural cornice work attain its first wild growth. There has been lots of correction necessary since 1910, where the intelligent minds have found new methods of usage, proper places for cornices, and where the mind was developed to comprehend all that had been done in the past. But right now, in 1927, or '28, lots of factors are contributing that a new second growth has been started. This growth looks unusually healthy and it promises to shoot up and forward like a sunflower and bloom, giving work and fortune to many. It is only men who see and understand, who hear and act, that will get into the better things under this new growth.

Here is wisdom, fellows. Think it out—roll it out thin so you can look through it. Unless you wade out into the center of the stream of life where growth is abundant—mainly mentally—you, too, are all right now you will ever be. I am confident we are in for a strong period of growth in the trade for some years to come.

I believe we are now living in a peculiar period strictly favorable to sheet metal conditions. The war has helped to bring this about, and if the trade handles it wisely, many a man will make his fortune. As this field gains momentum it will push into many corners and places not now dreamed of and all will make money for the trade. But when stupid men try to milk the trade of all it can give them without giving value received, that will hasten to retard this natural growth.

Beware of this period, fellows—it is that long, hard pull of life that always comes after the second growth. It is that condition where conservative practices will take hold, where substitute materials may get the upper hand again, and where competition is especially keen. It is this period where conditions will become equalized similar as in that period of 1911-12-13-14, and other examples of 1893 to 1898, etc., where the return of your day's toil is possibly only one dollar a day above your keep. To lose a day then meant harder saving, harder scrambling in order to make up the loss, because of the higher cost of living.

Beware of that hard, long pull when a trade is once stunned in its growth by thoughtless and ignorant and selfish practices—it may take a generation or more to revive it. Still a few men get fat in this long, hard pull, but most stay lean and humble and too often die in discouragement. Just so, to stun this new growth upon us will disappoint tens of thousands of immediate tradesmen and hundreds of thousands of others who depend upon it directly or indirectly. Thousands will hang on, dragging through life by the skin of their teeth—others will become disgruntled, quit and go into other fields where pastures are greener.

But today abundance is upon us—for those who see it—the second growth of architectural cornice work has begun. So, with your mind keyed to see it, are you reactionary inclined? Key your mind to see—open your mind to use the wonderful blessings that thousands will enjoy—enlarge your working horizon—use your drawing board more and more—r e a d reports—understand what they say—act in the living present. Don't let yourself die above the ears, but use Technical Training to pave the boulevards from the mind to your pocketbook. That is your secret.

"Take Stock—Where Do I Stand?"

The end of the year 1927 will be at hand shortly after you receive this issue of the *Bulletin*.

Before the end of the year plan to take stock of all that your business possesses.

Itemize each article of material, each machine, each desk and each tool that belongs to your business. Then place a value on it; not the value at which it was purchased, but the value when purchased less 10 per cent depreciation for each year you have had it in your possession if it can still be used. The material that you have in stock that is new or usable should be priced at the prevailing market price.

Balance your books, or, if you don't have books, get ready to start them. List each bill you owe and list each account owing to you. Add your stock and fixtures amount to the amount of bills owing you and add the amount of cash you have in bank and in hand to that amount.

Then subtract the amount you owe from the total of your assets.

What is the answer?

Who is responsible for it? Look in the mirror.

Youngstown Sheet & Tube Company Awards Contract

Youngstown Sheet & Tube Company, Youngstown, Ohio, has awarded the contract for structural steel for bridgework in connection with its new plant at Indiana Harbor to the Hansell-Elcock Company.

Farm Ventilation Requires Use of Several Types of Ventilators

Various Fruits and Vegetables for Successful Storage Demand Attention to Temperature and Moisture

By A. J. Mack*

THIS is the third of a series of articles on Farm Ventilation. The first two articles were devoted to the discussion of the automatic roof ventilators and their effectiveness. A list of factors which enter into the design of efficient roof ventilators was given, together with some results of tests made to determine those factors.

In this article some of the uses to which ventilation, and especially roof ventilator, may be applied on the farm will be discussed.

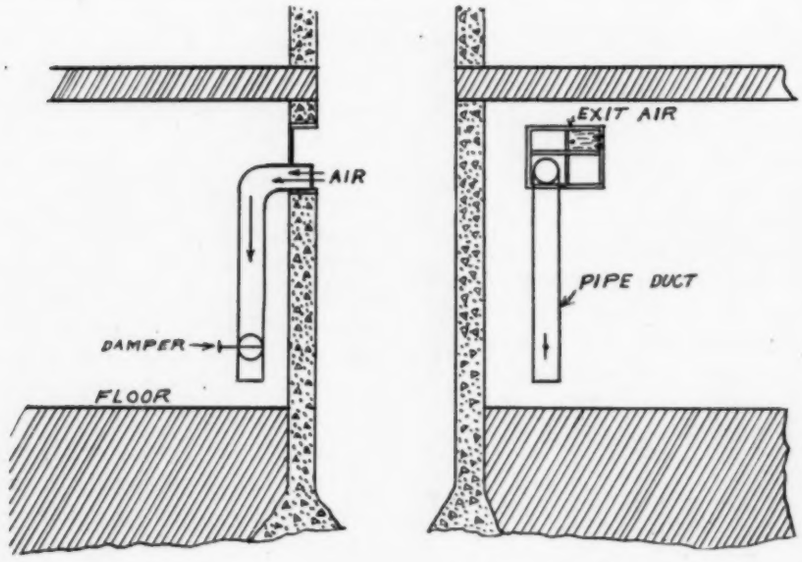


Figure 8

The successful storage of foodstuffs, especially fruits and vegetables, is of importance to any farmer, whether he farms on a large or on a small scale. It is, of course, economical to store fruits and vegetables for his own use where more produce is raised than will supply the immediate needs of the family. Such produce is generally to be preferred in its natural state than canned or preserved in later season. The successful farmer who produces fruits and vegetables for the market also resorts to storage, in order to realize the maximum profits from his efforts. Such being the case, it is quite evident that he will be interested in storage facilities which will preserve his products in the best condition and with a minimum loss.

Products to Be Stored Must Govern Ventilation

Before successful storage can be expected, the farmer must have certain scientific knowledge concerning each product to be stored. He must know the best temperature required to reduce losses to a minimum. He must know the required light conditions. He must have knowledge of the atmospheric conditions, such as humidity or moisture content of the air best suited for the storing of each product.

Proper ventilation alone will take care of many of these things, such as temperature regulation and air conditioning to regulate the moisture content of the air.

The chief places of storage provided on the farm are the attic, the cellar and the cave, and one or more of these places is available on most any farm. The attic is suitable for certain products which are stored dry, such as peas, beans, onions, etc. The chief requirement of such a storage space is that it be dry and well ventilated. It is not common practice to install roof ventilators above the attics, although that would be a possibility in cases where the attic is very extensively used for storage. Generally the ventilation in such cases is provided by placing the products in well-ventilated containers or on the attic floor and ventilating the attic by windows or louvers in the gable ends.

By far the greater portion of the storage on the farm is rightly done in cellars, caves and pits, wherein proper ventilation is of greater importance than is generally known. A well-ventilated cellar under the house is well suited for the storage of vegetables. Cellars containing a house heating furnace are not well suited, however, for such storage, as they are usually too warm and dry. In such cases a portion of the cellar should be partitioned off with a good wall.

One or more outside windows should be provided for ventilation as well as light when needed. They can also be used for temperature regulation. In addition, the circulation of the air can be improved by means of a duct of wood or metal arranged as in figure No. 8. This gives the correct circulation for the air, as shown by the arrows. The equipment must, of course, be so arranged that the openings can be closed when weather conditions demand. Should there be no window

*This is the third article of the series on Farm Ventilation written exclusively for American Artisan by Professor A. J. Mack, Associate Professor of Mechanical Engineering, Kansas State Agricultural College, Manhattan, Kansas.

available, openings could be made in the wall. Some method such as screens should also be employed to prevent the entrance of vermin through the ventilating apparatus.

Ventilation of Caves Requires Accurate Knowledge

The outdoor cave is an ideal method for the storing of many products, especially fruits and vegetables. For the most successful storage of many of these the absence of light is necessary, or at least very beneficial, and in this respect a cave is ideal.

Caves are built in many ways, but generally the greater portion is below the surface of the ground. In many places a small knoll or hill will be convenient for protection on three sides, with one side suitable for a grade entrance. Proper ventilation of the cave is also of importance. Many of the products to be stored are to a large extent composed of water and the maintenance of proper moisture content of the air as well as the proper temperature for storage is important.

Figure No. 9 gives suggestions on methods of ventilating caves. This insures proper direction of flow of air currents. Since so much depends upon the proper aeration of the stored products in almost all cases, it is well to have the products in well-ventilated trays, bins or barrels, which may be placed above the floor in order that air circulation be more positive.

Ventilation is also an important factor in successful pit storage. In the simplest form it consists of the extension of the straw covering out through the top of the dirt covering. This furnishes ample ventilation for storage of some crops on a small scale. In very severe weather this top is covered over with a sheet metal cover weighted down by a stone.

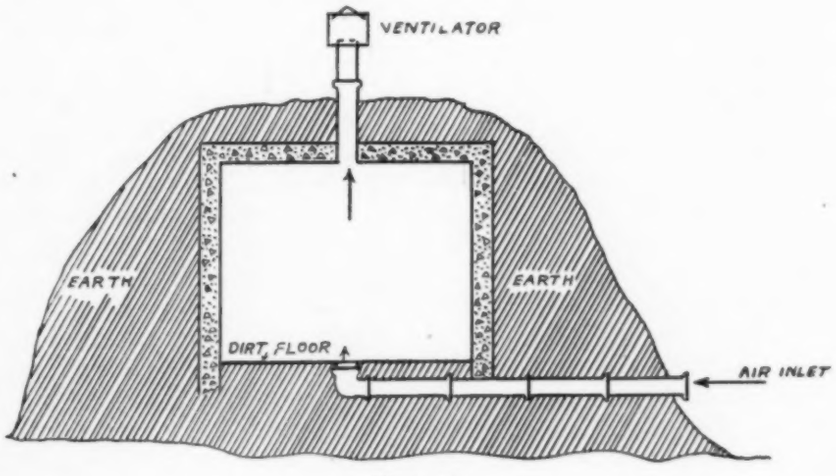
In more extensive pit storage perforated flues extend from near the bottom of the pit up through the top of the covering, and this serves for the elimination of any surplus moisture and heat developed in addition to the aeration. The top of these flues may consist of a ventilator or of board caps to prevent the entrance of rain or snow. Some means must also be provided for completely closing the flues when necessary.

All Light Excluded Best for Potato Storage

So far this article has dealt chiefly with home storage on a small scale and in such cases the storage would hardly generally get the scientific care which storage on a large scale would receive. In many portions of the country it is very necessary from an economical standpoint to resort to the storage of large quantities of products. This is especially true with sweet potatoes, Irish potatoes and possibly to a lesser extent, apples. All of these products can be stored in basements and caves and yet storage conditions such as temperatures vary greatly. The cave probably makes the most satisfactory place for storing potatoes and apples.

The storage conditions of these items is quite different, especially as regards temperature. A temperature of 33° F. to 36° F. is recommended by most writers as proper for Irish potato storage. This range seems to be best suited for maintaining the potato in its best condition and also for preventing powdery dry-rot infection. Potatoes for food purposes are best stored with all light excluded. Ventilation in potato storage is very important, all the more so since light windows cannot be used for an aid in this case.

The same general plan of ventilation as suggested previously in this article for small caves can be employed on a larger scale. The number and size of ventilators must be determined by the storage requirements. In some storage caves trap doors are provided in the roof for filling. These trap doors are also used for ventilators and temperature regulators, being opened and closed according to requirements. In many cases both trap doors and roof ventilators are employed. Ventilators should be provided with means for closing entirely when necessary. Since potatoes are stored in large quantities, the cave should be partitioned off with ventilated walls.



Figue 9

Also an air space should exist under the floor. The partitions eliminate the need of excessively large storage piles. They serve to carry away heat resulting from storage.

Humidity no doubt has much to do with successful storage of potatoes. The exact relative humidity best suited has not as yet been determined. It is quite evident that the air should have sufficient moisture to keep withering to a minimum and yet not sufficient for moisture to collect on the surface of the tubers. A humidity of 85 to 90 per cent, with storage temperatures of 33° to 35° F. has been considered satisfactory. These conditions can best be maintained only when ventilation has its proper function. Sweet potatoes may also be stored in pits or cellars, but they require a temperature of 55° together with

more dry storage, so sometimes artificial heat is required in places where sweet potatoes are stored.

Apples may be successfully stored with conditions very similar to those suitable for Irish potatoes.

In the preparation of this article the suggestions are in accordance with bulletins from the U. S. Department of Agriculture, which has done very extensive research work in all such matters.

Future articles of this series will deal with ventilation as applied to farm buildings and its value in matters of health and sanitation.

Is Your Name AMONG THIS LIST of Indianians!! If So, You Have Work

Committees Appointed for Getting Record Attendance at Indiana Convention

THE Sheet Metal Contractors' Association of Indiana, the Indiana Warm Air Heating and Ventilating Association and the Indiana Fur-Mets are well on the way with their preparations for one of the biggest conventions that state has ever held. The gathering will be staged in the Hotel Denison, Indianapolis, January 24, 25 and 26, 1928.

There will also be an exhibit of sheet metal and warm air heating products. Full information about the convention and exhibits can be had from the Executive Secretary, Paul R. Jordan, 631 S. Delaware Street, Indianapolis, and all correspondence should be directed to him.

The Joint Convention Committee have completed their list of chairmen and vice-chairmen who will be entrusted with the responsibility of seeing that every sheet metal contractor in their respective districts is invited to the convention and that each one has at least some understanding of the interesting and valuable features which the convention committee has arranged for them.

It is the intention to have a district chairman in every district where there is a sizable group of sheet metal and furnace contractors. These chairmen and their vice-chairmen were selected not only with regard to their prestige in their districts and success in a business way, but also with regard to their enthusiasm and interest in association affairs and in the general welfare of the sheet metal and furnace trade. While the committee realizes that its knowledge of the personnel of the entire state is not without its limitations, it is nevertheless confident that it has selected competent and active representatives in each district.

The district chairmen will not be asked to work up enthusiasm beyond their own natural desires in the matter. They will be asked, however, to get in touch with sheet metal contractors in their respresentative districts and to see that each one individually understands that he is personally invited to join the association and to attend the convention. The committee is certain that it will only be necessary for there to be a general understanding of the nature of the convention to assure a large attendance and a successful meeting.

The chairmen and vice-chairmen in their order are as follows:

Warsaw—Mr. Schlemmer, Kenneth Stokes.

Wabash—Cash Lawrence, George Schlemmer.

Angola—Ray Oberholtzer, D. B. Swift.

Laporte—Gerry Decker, H. P. Hansen.

Winnimac—Paul Davis, H. W. Darrow.

Culver—John Milner.

Lebanon—J. A. Brown, William Tucker.

New Castle—C. E. Miller, James Shrimer.

Plymouth—H. A. Armstrong.

Fowler—J. J. Morrisey, Mr. Klentzer.

Renesselaer—Simon Hochstetter, Leonard Rhoades.

LaGrange—Charles Smith, Frank Warner.

Elkhart—Virgil Roland, Claude Farrell.

Goshen—Wallace Manrow, Oliver Hope.

Huntington—P. B. Hart, Tom Ewing.

Decatur—A. R. Ashbaucher.

Tipton—John Katon, Lon Compton.

Cambridge City—Ore Huddleston.

Lynn—Al L. Hiatt.

Winchester—Garfield Hiatt, Harry McGee.

Portland—Jack Wilkins.

Bedford—Louis Heitger, C. A. Morrison.

Lafayette—Mr. Strate, Mr. Balkema.

Columbus—J. R. Everroad, Wm. Loesch.

Evansville—Joe Meyer, R. J. Coudret.

Gary—George Erdheim, Phil Zweig.

Fort Wayne—John C. Kreidt, Chas. E. Tharp.

South Bend—J. A. Harris, Andy Troeger.

Vincennes—Clarence Watson, W. C. Teschner.

Noblesville—Fred Michaels, J. A. Fritzler.

Muncie—Herman Michaels, Theo Leffingwell.

Bloomington—Cleve Brannum, H. G. Harris.

East Chicago—Earl Clinton.

Shelbyville—W. E. Brown, J. C. Pearson.

Peru—J. E. Dorsam.

Madison—Will Hoffman, J. Warren Smith.

Terre Haute—A. W. Dudley, Gus Hartman.

Union City—Howard L. Shafer.

Greensburg—Everett Boone.

Rushville—Walter Perkins, Fred Beale.

Anderson—Will Strassner, Kenneth Ricketts, Mr. McGuire.

Aurora—Clifford Dowers.

Rising Sun—Mr. Gibson.

Hammond—Jim Hackenberg, John Volk.

New Albany—R. C. Huncilman, Bert Wright.

Connersville—Robert Cain, E. W. Hudson.

Richmond—Charles Roland, Walter Sauer.

Frankfort—Ralph Hurlburt, O. C. Quick.

Crawfordsville—Art Cole, Frank Davis, M. C. Mason.

Logansport—Mr. David, Elmer Olsen.

Marion—Wilbur Woodward, Howard Swanger.

Seymour—Herman Pollert.

Greencastle—Fred A. Williams.

Gosport—B. M. Tompkins.

Attica—Harley O. Wallace.

Wassington—F. H. Gross, A. G. McCain.

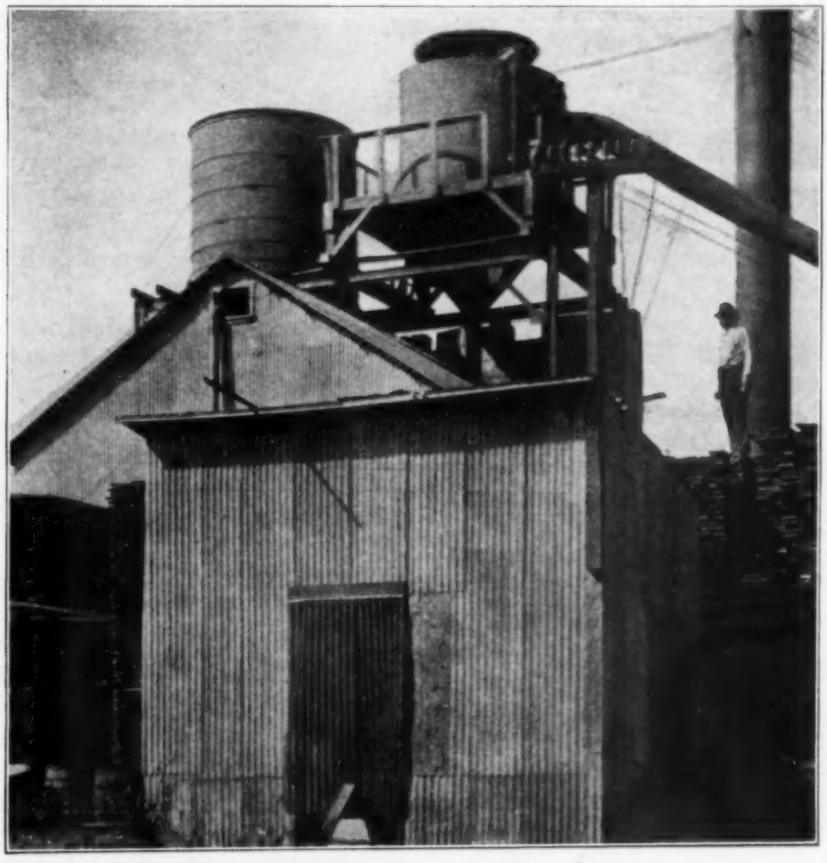
Princeton—Paul Snider, Charles Lankford.

Sullivan—Henry Schmidt.

Brazil—Charles Miller, W. E. Jameson.

Sheet Metal Used Extensively in and About Saw Mill

In Oxford, Pennsylvania, where the Oxford Flooring Company is located, sheet metal plays an important part in the daily output of this factory. With the factory covered by metal sheets, and many feet of pipe used to convey waste material to a boiler and a huge receptacle for catching this waste before it is finally sent down to the boiler room, it can readily be seen that sheet metal is a very wise adjunct and a fire preventive as well. Especially around a wood working factory has sheet metal proven of value, but other places have found sheet metal a great saver and economy in many ways, in modern industry. The photograph shows the large receptacle at the Oxford plant, as well as one of the sheet metal covered buildings.—*C. H. Thomas.*



Oxford, Pennsylvania, Flooring Company Buildings in the Construction of Which Sheet Metal Played An Important Part

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Walter C. Carroll Resigns Presidency of National Association Tin Plate Mfrs.

Walter C. Carroll, president of the National Association of Sheet and Tin Plate Manufacturers, Pittsburgh, has resigned that position to become president of the Oil Well Supply Company, Pittsburgh, succeeding Louis Brown, effective January 15, 1928. Prior to accepting his present position, Mr. Carroll was vice president of the Inland Steel Company, Chicago, in charge of sheet steel sales.

Mr. Brown who was elected chairman of the board, has been with his company for 36 years and was president for 16 years.

Gardiner Metal Company, Chicago, Produces New Self-Fluxing Solder

Instances are constantly coming to the attention of the sheet metal contractor where he requires a combination of flux and solder. This is particularly true where fine soldering is wanted. For this express purpose the Gardiner Metal Company, 1356 West Lake Street, Chicago, has developed a self-fluxing wire solder.

This new solder, the company officials say, is made by an entirely new process that insures an even distribution of flux throughout the entire length of the wire and a perfect mixture of high-grade metal.

The solder with acid flux is recommended for metal goods, heavy electrical work, general repairing in the home, on the farm and in the garage.

The solder with rosin flux is recommended for all radio work and for all fine electrical operations.

The solder with the special flux is recommended for that great variety of work on which pure rosin is too slow and acid is too sharp.

These solders are put up on 1, 5 and 20-pound spools and are furnished with three different kinds of flux.

Free samples are offered to manufacturers or jobbers or distributors who will write asking for them on their own letterheads. Full directions for use will be sent with the sample.

Watch for the big issue which will be mailed under date of December 31st. It's going to be the best that has ever been published by us. Tell us how you like it.

Random Notes and Sketches
By Sidney Arnold

"The essence of humor is sensibility; warm, tender fellow-feeling with all forms of existence."—Carlyle.

I want to take this opportunity to wish each and every one of my friends a very merry Christmas and a Happy New Year. Many of my friends were more than kind and thoughtful in sending me cards which I appreciate very much indeed.

* * *

I surely heard a good one on Charlie Glessner of the Excelsior Steel Furnace Company, and Creston Barnes, Charlie's right hand man, the other day. It so happened that these two gentlemen were in Cleveland, Ohio, not so long ago, where they called upon the Kohl Steel Supply Company, 5300 Windsor Avenue. Creston Barnes had been there before and had had the choke played upon him, but Charlie was uninitiated and, therefore, had great possibilities in store for him in the eyes of Oscor Kohl.

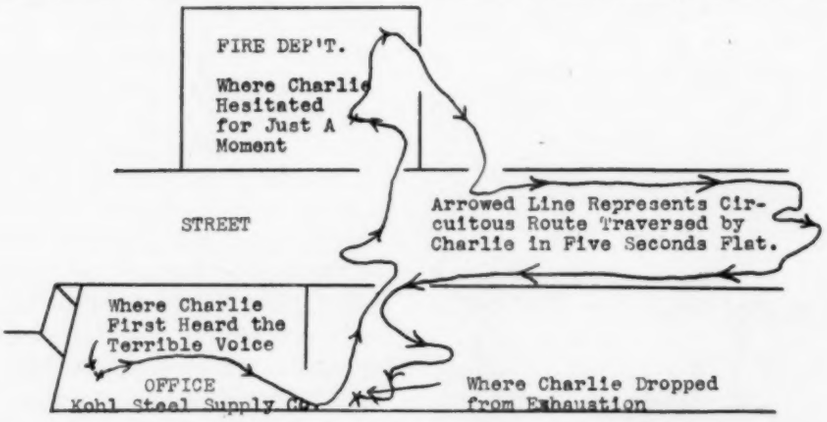
FIRE DEP'T.
Where Charlie Hesitated for Just A Moment
STREET
Arrowed Line Represents Circuitous Route Traversed by Charlie in Five Seconds Flat.
Where Charlie First Heard the Terrible Voice
OFFICE
Kohl Steel Supply Co.
Where Charlie Dropped from Exhaustion

Diagram Showing Path Taken by Charlie Glessner in His Miraculous Escape from the Fiendish Inhabitants of the Kohl Steel Supply Company, Cleveland

In order to begin the proceedings, Oscor Kohl asked Charlie if he would not go into a certain room in the back part of the building and view a new contrivance he had there. Charlie, always curious, hurried back into the room where he had been invited to go, but just as he was about to open the door the shrill voice of a woman angered to tiger fury smote upon his eardrums, saying, "Don't you dare to come in here, you blankety, blank, blank scoundrel or I'll shoot you dead." Poor Charlie was so frightened that he knew not which way to turn. Finally he found his speed legs and did he use them? Oh, my! He tore out of the back part of the building into the main office, out through the main office door, hesitated a moment and then darted across the street like a streak of lightning into the fire department. Here he paused a moment to get his breath, but hardly had he done so before he heard the same shrill, enraged's woman's voice directly behind him admonishing him to get out or be shot dead. Charlie needed no second invitation to go; in fact, he did not wait for it, but streaked out of the side door to the fire department, back onto the street, down which he ran to the end of the block, crossed the street and ran back to the office of the Kohl Steel Supply Company, which he entered and dropped to the floor from exhaustion. The entire round trip consumed exactly five seconds from exit to entrance. But imagine the chagrin of poor Charlie when he had recovered from his fright sufficiently to see Barnes and Kohl splitting their sides laughing at him and then learning that Mr. Kohl is a ventriloquist and had perpetrated the choke himself.

* * *

I had a very enjoyable visit at the new home of my friend, Charles E. Tharp, Fort Wayne, Indiana, a few days ago. During my all too short stay Mr. Tharp accorded me the privilege of inspecting the overhead warm air heating system he has installed. In spite of the fact that the temperature was hovering around the zero mark that night, the temperature in all of the rooms on the first floor, including the solarium, was well above the traditional 70-degree mark.

* * *

I had a very enjoyable day last week with the men behind the scenes at the plant of the Meyer Furnace Company, Peoria, Illinois, where I learned a lot about the Standard Code thing and those instruments they call furnaces. I never knew that a few castings could be made to create so much interest. F. E. Mehrings, J. F. Flavelle, Bill Baesch and Carl Roth of the F. Meyer & Brother Company certainly did their utmost to make a visit I paid them as enjoyable as possible, and I want them to know that I appreciated the courtesy they extended to me very much indeed.

* * *

Little Nellie's mother was entertaining the famous aviator. After he had finished a thrilling story, little daughter sighed deeply and said:

"I've clear forgot how it feels to sail through the air."

"Why, Nellie," said her mother in a shocked voice, "you were never in the air in your life."

"Gracious! Mamma, have you forgot that the stork brought me?" —*Texas Sheet Metal Contractors' Bulletin.*

* * *

Used the Wrong Copy

"What did you put in this prescription?" said Mike Reif of John Reif Sheet Metal Company.

"That I can tell only to the doctor," said the druggist.

"The doctor wants to know. Seems I gave you a Chinese laundry ticket and you filled that," replied Mike.

CUTTING DOWN THE FUEL BILL (Part 2)

By JOHN S. WALKER*

IN the previous article, I pointed out the various heat losses from a house, and the large reduction made in possible heat losses by the use of either storm windows or weather strips. For the house under consideration the heat losses were as follows:

A. Transmission loss through glass, 25 per cent.

B. Transmission loss through walls, 25 per cent.

C. Transmission loss through ceiling, (unfloored attic above) 25 per cent.

D. Infiltration through walls and windows, 25 per cent.

In figure 4, a section of a building insulated with "Insulex" is shown. This is a gypsum material with a cellular structure. "Celotex" is another well known insulator. It is often used as sheathing. "Thermofill" comes in a powdered form. Where used in exposed walls and ceilings, its manufacturers claim total heat loss reductions of from 15 to 40 per cent, according to the thickness of the insulation.

While the resulting reduction in fuel consumption does not coincide with the reduction in heat loss, it closely approaches it.

Where a high-priced fuel, such as gas or oil, is to be used, the saving made each year is sizable. These fuels are rapidly gaining in popularity, because of their convenience, but their use cannot become general until the total heat loss of homes is reduced 40 to 60 per cent.

In addition to saving money, insulation makes possible more uniform heating. Currents of cold air always will rush down an open stair case as long as waves of cold air are continually falling from the second floor ceiling. Draughts always will occur in homes with loose windows.

Even though furnace installers do not make a dime from the sale of these materials, it is time they frankly tell prospective home builders that homes must be insulated (both walls and ceiling) if further big reductions are to be made in the annual fuel bill.

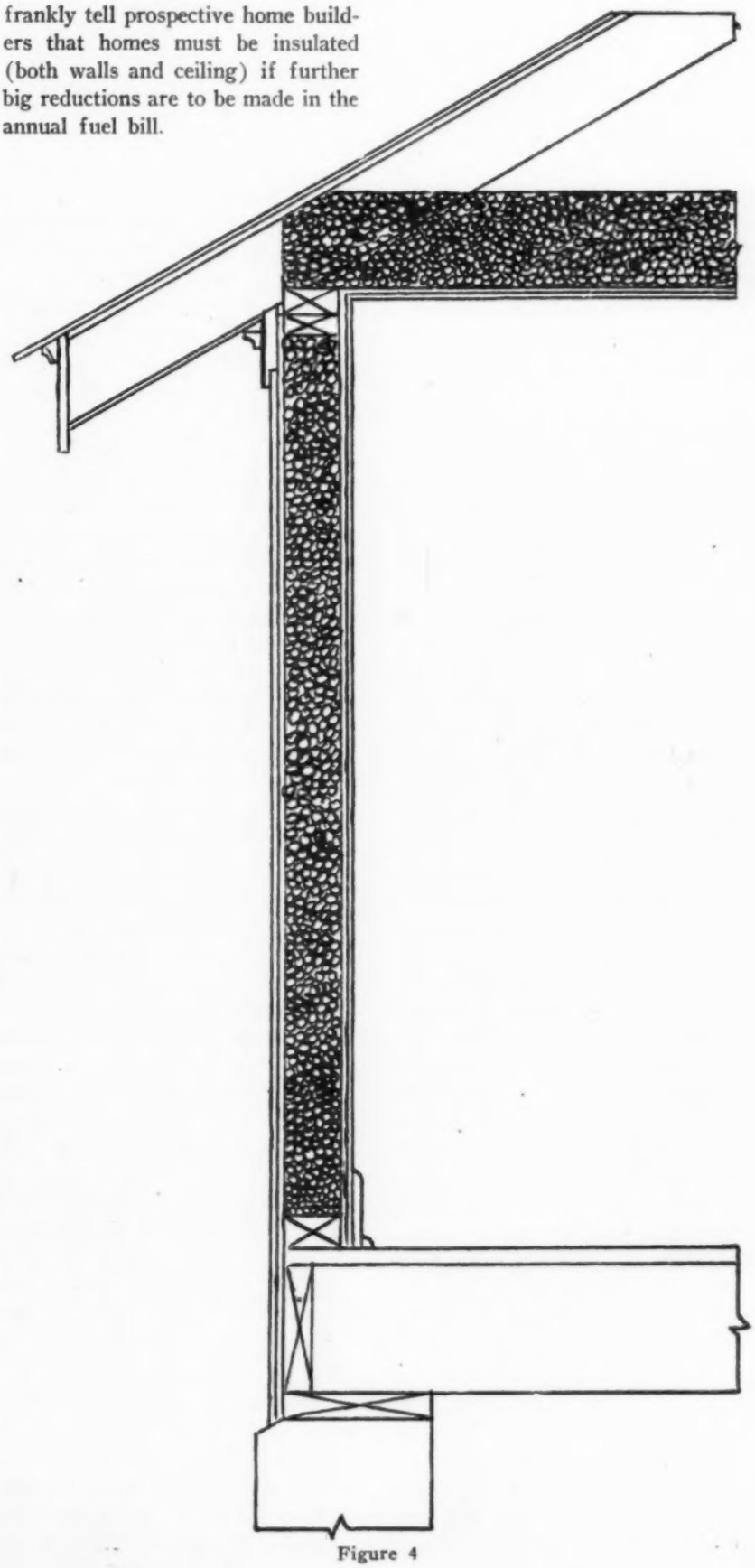

Figure 4

*Part two of the article on Cutting Down the Fuel Bill, written exclusively for AMERICAN ARTISAN by John S. Walker, President of the National Heatcraft Institute, Peoria, Illinois.

Greater Chicago Warm Air Heating Association BIG AID TO INDUSTRY

Gets Series of Articles by University of Illinois on Warm Air Heat Into Chicago Herald & Examiner

THE Greater Chicago Warm Air Heating Association held its regular meeting in the Hotel Sherman on the evening of December 19, President Burt presiding. After the strictly business features of the meeting were disposed of, the members entered into a very instructive discussion of various phases of their business. The subject of mechanic's liens was broached and Mike Reif, John Reif Sheet Metal Works, and Rudy Guenther, Accurate Sheet Metal Works, related several of their experiences in connection with the application of the mechanic's liens.

Edward N. Stahler of the G. & S. Stove and Furnace Company continued the discussion of the Standard Code from the last meeting. This entered into the explanation and application of the new furnace rating formula which appears in the Fourth edition of the Standard Code.

In making this explanation Mr. Stahler resorted to a concrete case of application. He took three examples; namely, one having a positive correction, one having no correction, and one having a negative correction.

Taking them in the order which they are given, he proceeded as follows: It is desired to find L or the square inches of warm air pipe connected to a furnace in which G is the grate area in square inches, R is the ratio of heating surface area to grate area; 1.75 is a constant based upon the results obtained in the association research on a furnace having 20 square feet of heating surface for each square foot of grate.

In the first place, Mr. Stahler explained that the formula allows 1.75 square inches of warm air pipe area for each square inch of grate area, for the furnace having a ratio of heating surface to grate surface of 20 to 1. For furnaces having other ratios of heating surfaces to grate surface, it adds 2 per cent or deducts 2 per cent for each unit above or below a ratio of 20.

In the first example or the positive correction, Mr. Stahler took a grate area of 346 square inches, a heating surface area of 7,540 square inches and a ratio of heating surface area to grate area of 21.8 to 1. The formula is: $L = 1.75\ G\ [1 \mp 0.02\ (R-20)]$. In the first problem applying the formula R—20 equals 1.8. Two times 1.8 gives a correction percentage of 3.6. $1.75 \times G$ equals 1.75×346 equals 605.5, plus the positive correction, which is 3.6×605.5, or 21.798, equals 606 plus 22 equals 628. "L" equals 628 square inches of warm air pipe area for the furnace.

In the second problem the grate area in square inches was the same as in the first problem, but the ratio of heating surface to grate area was 20 to 1. Therefore, there being no correction, a straight application of the formula, $1.75 \times G$, was made, resulting in a value for L of 606 square inches.

In the third problem the ratio of heating surface to grate area was 16.4 to 1 or a minus correction. Here the value for R—20 equaled —3.6, multiplied by 2 per cent, equalling —7.2. Then our old friend, $1.75 \times G = 606$. From this we subtract 44 or the minus correction and we find our L to equal 562 square inches of warm air pipe area.

The Greater Chicago Warm Air Heating Association is really doing a lot of things for its members and for the interests of the warm air heating industry in general. Some time ago a group of the members put on a collective advertising campaign in one of the Chicago daily newspapers. The latest of their accomplishments is that of getting a series of articles on warm air heating into the architectural page of the Sunday Chicago *Herald & Examiner* by the Mechanical Engineering Department of the University of Illinois, which, of course, is under the direction of Professor A. C. Willard. The following article is the first of the series by the University of Illinois on warm air heating and it appeared in the December 18th issue of the Chicago *Herald & Examiner*:

"Economy Big Feature of Warm Air Heating Plant"

"As a means of heating dwellings of average size the warm air heating system is becoming increasingly popular; and the field for this class of heating is even spreading to large residences. The growing popularity of warm air heating may be traced to certain causes, such as the relative economy of installations as compared with other heating installation costs, but a greater knowledge of the advantages and the methods to pursue in obtaining these advantages has much to do with the progression.

"The engineering experiment station of the University of Illinois has taken an important part in reviving interest in indirect heating by means of warm air furnaces. Acting in co-operation with the manufacturers' organization, the National Warm Air Heating and Ventilating Association, the station has engaged in a thorough investigation of the problems of warm air heating.

Warm Air vs. Hot Air

"Both laboratory and practical installation tests of many kinds have been made and the results published in bulletin form. This co-operative effort by manufacturer and disinterested laboratory technician has, after several years, produced a knowledge

of the fundamentals which, applied, gives assurance of satisfactory heating results by warm air.

"The term 'warm air' is full of meaning, as it emphasizes the value of moderate air temperatures in heating and deprecates the idea of heating by 'hot air.' In warm air heating a large volume of mildly tempered air is circulated through the building, producing an equal temperature not likely to be obtained if high air temperatures and small air volume exist at the points of delivery into the rooms.

"A temperature above 175 degrees F. at the registers in zero weather should be a maximum. In the warm air heating research residence at the university the average register temperature in coldest weather is 135 degrees F. The use of lower delivery temperatures also eliminates many of the old faults of 'hot air' and presents advantages in the way of economy, cleanliness and improved humidity and atmospheric conditions.

Many Advantages

"Aside from its lower initial cost, there are certain advantages in warm air heating over other types of heating:

"(a) It is flexible and responsive. No other system will respond to a demand for heat so quickly, nor permit of such prompt adjustment to varying weather conditions.

"(b) Circulation of air through the house creates better air conditions, as a large proportion of unbreathed air is being supplied constantly.

"(c) Humidity may be obtained and regulated by means inherent to the system.

"(d) Very little space is obstructed in the occupied portion of the house, and valuable wall space is not sacrificed.

"(e) The responsiveness of the system to proper regulation makes for economy of fuel. This economy characteristic depends on the intelligent care of the operator, regardless of the type of heating employed. In the warm air heating research residence at the university the house efficiencies are as high as 90 per cent with anthracite coal and coke, and 75 per cent with bituminous coal, indicating that the economy is very good and the waste very low.

"(f) The warm air heating system is most 'fool-proof.' There is nothing to freeze, no air valves nor water line to watch. Heating is accomplished by simply building a fire without preliminaries and heating may be stopped by letting the fire go out. There will be no disastrous after effects.

* * *

"The above is the first in a series of articles prepared especially for this page by the Mechanical Engineering Department of the University of Illinois."

The good effect of such articles as the above upon the industry and the public's attitude toward the warm air heating industry is great indeed, and it is such accomplishments as these that are laid at the door of organizations who take their work seriously, as the Greater Chicago Warm Air Heating Association is doing. What single individual could have accomplished what this organization has already done?

Value of Fan in Warm Air Heating —By Charles G. Buder

When a furnace is placed in a casing and heated, the air within the casing expands and thus becomes lighter per cubic foot than the air without and air motion is produced. This is known as gravity circulation. The amount of air that can be displaced is a direct function of this difference in temperature. As the demand for heat becomes greater there must be a rise in temperature at the register.

In a well-designed gravity installation the maximum allowable temperature at the register is about 180 degrees, or a difference of 110 degrees from the desired room temperature of 70 degrees. This difference of temperature will cause the air to stratify in the room, and while not objectionable in buildings with low ceilings, it is very objectionable in buildings with high ceilings, such as churches and theaters.

Where a fan is used in connection with the furnace, a larger volume of air can be delivered at a lower temperature, diminishing the possibilities of stratification.

For example, suppose a building requires 2,000 cubic feet per minute to be recirculated at a register temperature of 110 degrees above room temperature. The B. t. u. requirement would be $\frac{2{,}000}{55} \times 110$, or 4,000 B. t. u. per minute. If this volume could be increased to three times 2,000 cubic feet per minute, or to 6,000 cubic feet per minute, a temperature rise of only 36.6 would be required.

An actual test of a building having a ceiling height of 35 feet showed a temperature of 63 degrees at the floor and 98 degrees at the ceiling when operating as a gravity system, a difference of 35 degrees, or an average of 1 degree per foot. The fan was then run for an hour and the temperature showed 70 degrees at the floor and 77 degrees at the ceiling, or a difference of 7 degrees or 1/5 degree per foot.

In addition to preventing stratification the fan helps to insure better distribution to all parts of the building and thus helps to prevent air stagnation.

The transfer of heat between a hot metal and the surrounding air depends upon the velocity of the air over the surface of the metal. This is due to the insulating effect of a more or less stationary film of air next to the surface. This film of air offers considerable resistance to the flow of heat, known as the surface resistance. The surface resistance is affected by the character and roughness of the surface and the velocity of the air over the surface. The moving air tends to break up this insulating film and decrease its thickness and insulating effect. With the higher air velocities over the surface of the furnace, attained by forced circulation, the insulating effect of this film of air is decreased and the heat transfer, for the same temperature difference between the furnace and air in the casing, is increased.

The rate of heat transfer from one body to another depends upon the difference in temperature. The fan, by increasing the volume of air handled, produces a lower air temperature inside the casing; a greater heat transfer is therefore made possible and higher efficiency is realized. First, due to the decreased surface resistance caused by the greater air velocity, and second, due to the greater difference in temperature between the furnace and the surrounding air.

When a furnace is operated as a gravity system, the motive power causing air motion over the furnace is supplied by the increase in temperature of the air itself, hence, the air next to the furnace, being most heated, rises more rapidly than the air near the casing wall. This is a condition which is desired. With the application of a fan there is no great tendency for a maximum air velocity over the furnace and baffling becomes necessary to gain this end, hence a furnace with fan offers a field for careful design in arranging such baffles in order to produce the best results for the customer or the public.

*Rules for Burning Coal in Small Domestic Furnaces**

Keep Heating Surfaces Clean—Carry Deep Fire—Do Not Let Fire Burn Too Low

THE following rules for burning coal in small domestic furnaces were compiled from the rules prepared by L. P. Breckenridge, for the fuel division of the American Society of Mechanical Engineers, supplementary notes prepared by C. H. B. Hotchkiss, assistant professor heating and ventilating, Purdue University:

Part 1. Preparation of Equipment for Any Kind of Coal

a. See that the grates are in good order.

b. Seal air leaks in ash pit and around clean-out doors; otherwise the dampers will not control the fire.

c. Cover steam and water pipes to prevent unnecessary radiation.

d. Provide suitable clean-out tools for boiler flues.

e. Save your coal by not operating your furnace in mild weather—use fireplaces, gas logs, kerosene heaters, etc.

f. Prevent air leaks as far as possible by weather strips and storm windows.

g. Provide for recirculating air in hot-air furnaces by convenient slides in the pipes.

*Reprinted from Purdue University Circular No. 9 of the Engineering Extension Department, LaFayette, Indiana.

Part 2. Management of Furnace for Bituminous (Soft) Coal

No change in grates is needed to burn bituminous coal in furnaces heretofore using anthracite, except in the case of grates adapted to fine sizes of anthracite where the air passages are small and not easily cleaned. To burn volatile coals without serious smoking may require change in equipment.

1. Keep heating surfaces clean.

2. Carry a deep fire (12 to 18 inches).

3. Do not let the fire burn too low.

4. For quick heat fire only a small amount of coal.

5. Study carefully the proper use of the three dampers. Usually it will be found that (a) the pipe or flue damper should be open when firing fresh coal and should be partly closed when the fire is well started; (b) the ash pit damper should be open to start up fire, open a little during the day, but shut at night; (c) the check draft damper should be shut to start up fire, open partly during the day and night as experience shows to be necessary.

6. When fresh coal is fired, admit air over the fire through the slide in the fire door until smoking ceases, and then close the slide.

7. Do not open the fire door to check the fire; learn to use the dampers to control the rate of burning; all air admitted above the fire in excess of that needed for combustion simply cools the heating surfaces which furnish the heat for the house.

8. When firing coal for a long run or "banking" for the night, push live coals back or to the side and put a lot of fresh coal into the hole thus made; it will burn slowly and keep a long time. If large cakes of coke are formed in the furnace, these should be broken up and the fire levelled.

9. Shake out the ashes when necessary, but do not waste coals into the ash pit. Close the ash pit door while shaking.

10. Do not let ashes pile up under the grates. In this way grates "burn out." Grates should last many years.

11. To save the heat made by burning coal, the following suggestions may appeal to some:

(a) Do not heat unused rooms; (b) let in sunshine; (c) pull down shades early at night; (d) do not ventilate unnecessarily all night; (e) do not overheat the house—65 to 70 is sufficient for most people; (f) get a thermometer and watch the weather.

To avoid the soft coal dust, the fuel should be well wet down before being put into the cellar, and the front of the pile kept moist, with an occasional bucket or two of water.

Part 3. Rules for Burning Coke with Small-Size Anthracite

a. Carry a deep bed of fuel—even above the level of the fire door.

b. Shake the grate to remove ashes and lower the fuel bed, but stop when the first live coals appear.

c. Spread a thin layer of anthracite over the entire grate and allow a few minutes for this fuel to ignite. Next fill the fire pot with coke, and allow this to burn until blue flames appear, then add another layer of anthracite.

d. After firing and seeing that the charge is ignited, check off the

draft to the desired point for slow burning.

e. When banking the fire for the night, use less coke and more anthracite, but otherwise fire in the same manner.

f. Anthracite pea or buckwheat can often be used alone with success. This will happen when the draft is unusually good and the furnace is amply large. Small size anthracite ignites slowly. It is best to fire one-half of the grate at a time, allowing the first half of the charge to ignite before adding the second half. Small sizes may be used in the fall and spring if not in the winter.

Part 4. Suggestions for Burning Indiana Coals

The following suggestions have been prepared by C. H. B. Hotchkiss, assistant professor of heating and ventilating, Purdue University, and apply especially to the coals commonly available in Indiana.

1. In general, better results will be obtained by firing small quantities of coal at frequent intervals rather than larger quantities at greater intervals.

2. Most furnaces are designed and intended to operate with the fuel bed about level with the bottom of the fire door. Best results will follow when the fuel level is kept at that height. In mild weather simply let the ashes accumulate on (not under) the grates. This will serve to hold the top of the fuel bed at the desired height.

3. "Banking" the fire over night is much easier to do successfully with a "live" fire than with one nearly burned out. Prepare the fire for banking before the last minute. Care the night before may save a cold house and frozen pipes the next morning.

4. Most soft coals "gas" very freely when brought in contact with heat. Unless this gas is burned as rapidly as formed it may escape into the house and become a nuisance or it may cause an explosion in the furnace or the chimney. This gas can be burned up and made harmless only when enough air is admitted to the fire to accomplish this result. The slide damper in the firing door is placed there for that purpose. Consequently the following procedure is recommended to overcome this gas or explosion difficulty:

(a) When firing fresh coal open all the drafts, including the slide on the firing door. As the fire picks up the gas will form rapidly and will burn as formed because of the air admitted through the slide.

(b) Check off the fire by closing the ash pit and smoke pipe dampers, leaving the slide in the firing door open until the gas stops forming. This may require from 15 to 30 minutes. The usual mistake is to close the slide too soon. The proper time can generally be found by a little experimenting.

5. While the practice of wetting coal is often desirable in order to prevent dust it should be borne in mind that the moisture added acts to decrease the heating value of the coal. Consequently no more water should be used than is necessary to keep the dust down.

Soft coals are also somewhat inclined toward self-starting fires (spontaneous combustion). The danger is greater when the coal is wet, which fact makes it further desirable to merely moisten coal in the bin rather than to wet it excessively.

Lennox Furnace Company Holds Group Sales Meetings

At Both Syracuse, New York, and Marshalltown, Iowa, Plants With Good Success

THE Lennox Furnace Company has this year introduced a rather novel method of getting its salesmen together. In order to get into closer contact with all of the selesmen than is possible where they all assemble at one place at one time, the officers of the company this year adopted the group meeting plan.

Three group meetings were held at the Syracuse, New York, plant and three at the Marshalltown, Iowa, plant. Those at Syracuse were in progress from November 28th to December 8th, and those at Marshalltown had their being between December 12th and December 23rd.

The Syracuse meetings were staged under the direction of C. H. Schechter, Sales Manager of the company's eastern plant. Those at Marshalltown were supervised by R. T. Wasson, Second Vice-President and Sales Manager of the company.

During the meetings at Marshalltown several territory changes were made. H. O. McElwain, who has been making northern Indiana and Michigan, will travel northern Indiana exclusively during the coming year and E. W. Sidwell has been placed in the Michigan territory.

George H. Graham will represent the company in southern Minnesota, including Minneapolis and St. Paul.

The group meetings met the anticipations of the officers responsible for staging them in the way of promoting the spirit of fellowship among the salesmen and between the salesmen and the officers.

Present at the Syracuse group meetings from the Marshalltown organization were D. W. Norris, President; F. S. Hynds, Vice-President and Treasurer; E. C. Carlson, Secretary and Production Manager; and R. T. Wasson, Second Vice-President and Sales Manager. Mr. Norris made the trip all the way from Pasadena, California, where he is spending the winter, to attend the meeting.

Control of Materials Becoming Specialized

Men today are beginning to realize as never before, perhaps, the fact a piece of merchandise is only a dollar in another form. They have not realized it in the past, or they have not acted as if they realized it. Today control of materials is becoming a highly specialized end of the business, and the buyer realizes that the plant of the supplier or vendor of materials is really a

part of his own plant, so far as the actualities of business are concerned. It is to him an originating, contributing unit. It is an outside unit and must have the same producing schedule as the inside producing unit, otherwise the inside and outside groups will not be in mesh and you have unbalance—a condition that more often than not is only fully brought to light about the time the receiver steps in.

The "quick turnover" demand of the manufacturer, which is increasing in its intensity daily, places a great responsibility on the material manufacturers. Thus the well-seasoned, well-organized supplier is finding his problem of selling the manufacturer simplified, since ability to meet the "quick turnover" requirements of the manufacturer is given equal consideration with price. In some cases it is given even more consideration.

The new condition cements the supplier and the manufacturer more closely; fewer changes in sources of supply are being made. One of the largest factories has purchased 46 per cent of its material for ten years from the same sources of supply, the reason being that in each case the old source of supply knows exactly what is required and has built and trained his organization to meet the company's demands in this respect.

Improvised Motor Car BRINGS BIGGER BUSINESS for J. C. Rummel & Son

ORIGINAL COST SMALL and Returned Many Times Over

WARM air heating contractors are constantly confronted with the problem of properly advertising their businesses. Many of them say that they have tried this idea and that idea and found them lacking. They feel that the local newspapers do not give them adequate representation and that circular letters find their way into the waste basket without bringing about the desired result.

There are undoubtedly good and sufficient reasons why these two types of advertising have failed to bring these particular men business. Both newspaper and direct-by-mail advertising can be made to bring results if gone about in the proper manner. There are certain definite rules with regard to the preparation of each and also with regard to where and how it is directed which must be observed before the desired result can be obtained.

There is another method of advertising one's business that is inexpensive and has been found in almost every case in which it has been tried to produce very definite results, and that method is the rigging up of an old car in some odd manner that will attract attention.

The accompanying illustration is that of a car, purchased for $35 and revamped in accordance with the ideas of W. A. Rummel, General Manager of John C. Rummel & Son, 1124 South Main Street, South Bend, Indiana.

A few lengths of pipe, a placard or two and a can of silver paint was all that was required to make this Ford into a moving advertisement for the John C. Rummel & Son company. The car is left standing at the curb wherever the workmen happen to be and, according to Mr. Rummel, it surely does stop the people. "One day," said Mr. Rummel, "I was coming out of a house where I had made a call and got into this car, which had been left standing at the curb, and as I did so a man came up to me and asked if I were the proprietor of the company named on the car. Upon telling him that I was, he said: 'Here is my address. I wish you would come over and look my furnace over. I think it needs repairing or remodelling.' A direct hit for this type of advertising and that is happening all of the time. We also have an illustration of this outlandish arrangement on all of our stationery so as to tie up our advertising done in this way with our business. This idea has surely been a good one for getting business, and it is well worth the amount of money spent to get it up many times over."

Front, Side and Rear Views of the Truck Used by J. C. Rummel & Son, South Bend, Indiana, Principally for Advertising Purposes. The Truck Is Parked Around in the Residential Districts of South Bend Each Day and Brings Much Business to the Firm

This truck idea is not a new one. It has been used by many warm air heating men, but the peculiar thing about it is that nowhere have we been able to find a man who had used it without success.

Racine Sheet Metal Works Adds Second Story to Plant

The Racine Sheet Metal Works, Racine, Wisconsin, recently incorporated, has added a second story to its plant to allow enlarged production. The company manufactures cornice, skylights, fireproof windows, storm and screen doors and windows.

Roof Ventilators Should Be Ample in Size

The proper procedure and calculation to determine the number and size of roof ventilators for a building or room, in order to procure specific results, have been published and advocated in such varied form and with such questionable results, that confusion reigns in the minds of the public and building owners as to the good or bad in roof ventilation as a whole, according to W. H. Jardine, Philadelphia.

In an effort to promote sales of some particular make or type of ventilator, the trend of recommendations is for fewer or smaller-sized ventilators, where larger should be used. This, if judged from the fact that few are satisfactory, and the overventilated building being exceptional, leads to the belief that these lines of procedure do not accrue to the public confidence or to the great advancement in building sanitation necessary to the progres in this line.

Further, the improvements in roof ventilators' exhaust from natural agencies in the last twenty years has not been such as to warrant decreasing quantities or sizes to be used, as now advocated, when size and occupants of all buildings are being increased.

All former calculations of size roof ventilators required were based on 1 sq. in. of ventilator area to 1 sq. ft. of floor space, and this appears nearer a satisfactory working basis than present practice in view of the fact that the amount of ventilation, if too great, may be automatically or manually regulated through damper, when it is desired. This would give better results, makes a flexible system and would be more to our roof ventilator needs this day.

Stephen S. Tuthill, American Zinc Convalescing in Brooklyn Hospital

Stephen S. Tuthill, Secretary of the American Zinc Institute since its organization ten years ago, underwent an operation late in November at a Brooklyn Hospital and is now reporting to be recovering rapidly.

Mr. Tuthill is convalescing at Idylease Inn in Newfoundland, New Jersey, near Franklin, New Jersey, where is one of the large mines of the New Jersey Zinc Company.

Mr. Tuthill has been in touch with his office daily since a few days after the operation and is feeling fine.

"Pfeifer" Roofing Clip

From Elkhart Bridge and Iron Works, Elkhart, Indiana.

Can you tell us who makes the "Pfeifer" Roofing Clip for fastening corrugated roofing?

Ans.—William Pfeifer, 473 Greenwich, New York City.

Kentucky Hardware & Implement Association, Seelbach Hotel, Louisville, Kentucky, January 17 to 20, 1927. Secretary-treasurer, J. M. Stone, 200 Republic Building, Louisville, Kentucky.

Missouri Retail Hardware Association, the Hotel Statler, St. Louis, January 23-25. F. X. Becherer, secretary, 5106 North Broadway, St. Louis.

Sheet Metal Contractors' Association of Indiana, January 24, 25 and 26. 1928, at Indianapolis, Indiana. Executive secretary, Paul R. Jordan, 631 South Delaware Street, Indianapolis.

Indiana Warm Air Heating and Ventilating Association, January 24, 25 and 26, 1928, Indianapolis. Secretary Frank E. Anderson, 2242 Liberty avenue, Terre Haute, Indiana.

Indiana Fur. Mets, January 24, 25 and 26, 1928, Indianapolis. Secretary Harry R. Jones, 308 Kenmore Road, Indianapolis.

Nebraska Retail Hardware Association, Omaha, January 31 to February 3. George H. Dietz, secretary, 414-19 Little Building, Lincoln.

Indiana Retail Hardware Association, Indianapolis, January 31 to February 3. The Claypool Hotel will be convention headquarters and meeting place. G. F. Sheely, secretary, 911 Meyer-Kiser Bank Building, Indianapolis.

Master Sheet Metal Contractors' Association of Wisconsin, Republican Hotel, Milwaukee, Wisconsin, February 6 and 7, 1928. L. F. Reinke, 514 Market Street, Milwaukee, Wisconsin, secretary.

Michigan Retail Hardware Association, Detroit, February 7-10. The Statler Hotel will be headquarters. A. J. Scott, secretary, Marine City.

Wisconsin Retail Hardware Association, Auditorium, Milwaukee, February 7-10. P. J. Jacobs, secretary, Stevens Point.

Iowa Retail Hardware Association, Des Moines, February 14-17. A. R. Sale, secretary, Mason City.

Illinois Retail Hardware Association, February 14, 15 and 16, at the Sherman Hotel, Chicago. Leon D. Nish, secretary, 14-16 North Spring Street, Elgin.

Pennsylvania and Atlantic Seaboard Hardware Association, Philadelphia Commercial Museum, February 14-17. Sharon E. Jones, secretary, Wesley Building, Philadelphia.

Minnesota Retail Hardware Association, New Municipal Auditorium, Minneapolis, February 21-24. C. H. Casey, manager, Nicollet at 24th Street, Minneapolis.

Ohio Hardware Association will hold its 1928 convention and exhibit at Toledo, February 21-24. James B. Carson, secretary, 411 Mutual Home Building, Dayton.

South Dakota Retail Hardware Association, Coliseum Building, in Sioux Falls, February 27, 28, 29, 1928. Charles H. Casey, Secretary, Nicollet at 24th Streets, Minneapolis.

Michigan Sheet Metal & Roofing Contractors' Association, Kalamazoo, Michigan, March 5, 6, 7, 8, 1928. Secretary, Frank E. Ederle, 1121 Franklin Street, Grand Rapids, Michigan.

Arkansas Retail Hardware Association, Little Rock, during the month of May, exact dates for the meeting to be determined later. L. P. Biggs, secretary, 815-16 Southern Trust Building, Little Rock.

National Association of Sheet Metal Contractors of the United States, the Ohio Sheet Metal Contractors' Association, joint convention, Hotel Statler, Cleveland, Ohio, May 22, 23, 24 and 25, 1928. J. M. Saunders, 215 Plymouth Building, Cleveland, Ohio, convention chairman.

Confidence in Steel Market Grows as Active Buying Continues—First Quarter Prospects Look Bright

Pig Iron Prices Are Steady—Buying of Nonferrous Metals Is Light

ACTIVITY in the iron and steel markets is heartening, considering year-end handicaps. Specifications from users of finished steel against low-priced fourth quarter contracts are mitigating the December tendency to let down in production, while first quarter bookings in both pig iron and finished steel continue heavy.

High expectations for the first quarter have received further support. Quiet negotiation for freight cars is greater than the 11,000 cars openly inquired for. Some foundries on automotive work have never covered more heavily on first quarter pig iron. Building steel inquiry is seasonally high. Scrap prices are rising in most districts.

Considerable tonnage of heavy finished steel, some of it for stock, has been developed by the firm price stand taken by the mills. The stiffening tendency in some of the lighter steel products is as yet more gesture than fact, because considerable first quarter business was booked at recent low levels.

The year on the whole has been rather a good one in shapes and plates. Shape tonnage probably exceeded that of 1926. Plates were in lighter demand for freight cars than last year, but in heavier demand for large size pipe. In bars it seems clear the 1927 tonnage has been below that of 1926. A much heavier movement in plates for car building is to be expected in the next few months than there has been in the past three or four months.

Pig Iron

At Pittsburgh several additional lots of foundry iron, involving up to 1,000 tons at a time, have been closed at $17.25, base, valley. A few smaller sales, one carload to a few hundred tons at a time, brought $17.50. A strong effort is being made to establish $17.50 as minimum, one interest refusing to take business below that figure.

Bessemer iron is definitely on a basis of $17.50, valley, on the strength of the sale of 5,000 tons to one concern, noted last week, and several additional lots placed since then, including one of 500 tons. Basic still is nominal at $17.50, valley, although valley producers admit they would have to go to $16.50 should any business come up which they wanted.

At Chicago pig iron sales for first quarter are continuing at practically the same rate of the past three weeks, with indications that the December buying movement is considerably ahead of November. One market feature is the large number of inquiries and sales of 200 to 300 tons in the Chicago-Milwaukee district, northern and central Illinois and northern Indiana. Price is firm at $18.50, Chicago furnace.

About 6,000 tons more charcoal iron has been liquidated from stock by a furnace at $5 to $7 under the current base furnace price. Several carloads to 100-ton lots of silvery iron have been sold.

It is reported that two and perhaps three merchant furnace stacks in this district will be blown out early in January, as stocks are adequate for the present.

Pig iron consumers at Birmingham still adhere to the policy of hand-to-mouth buying. Shipments are very active and in the past few weeks surplus foundry iron stocks have been reduced considerably. The price is $16, base, Birmingham, for spot delivery, although reports are heard that sales have been made for first quarter at the same level.

Copper

A little copper sold at 14.12½ cents, Connecticut, but more metal was sold for lower figures, down to 14 cents, delivered. The total of business at all figures, however, was light, as users had been well covered in their recent buying. The export price is unchanged at 14½ cents c.i.f. European ports.

Zinc

Buying of zinc has been light and the market has sagged slowly, but has held fairly well in the past few days. There has been no great pressure to sell metal, but just sufficient slackness to weaken prices.

Tin

Prices of tin have been unusually steady in the past two weeks, but with a slight tendency downward. Large shipments are expected from the Straits this month and small deliveries here, with an increase in the world visible.

Lead

The lead market has held steady through a dull weak, because producers are well booked for a month or so. A little metal has sagged to 6.30 cents, East St. Louis, but most of it is held higher. There is just one price on New York basis, 6.50 cents.

Solder

Chicago warehouse prices on solder are as follows: Warranted 50-50, $36.50; Commercial 45-55, $33.50; plumbers', $30.50; all per 100 pounds.

Old Metals

Wholesale quotations in the Chicago district, which should be considered as nominal, are as follows: Old steel axles, $15.00 to $15.50; old iron axles, $19.00 to $19.50; steel springs, $14.25 to $14.75; No. 1 wrought iron, $10.50 to $11.00; No. 1 cast, $12.25 to $12.75, all per net tons. Prices for non-ferrous metals are quoted as follows, per pound: Light copper, 9 cents; zinc, 3½ cents; cast aluminum, 13¾ cents.

A PARTIAL LIST
OF OUR
HEATING AND VENTILATING SUPPLIES

Ventilators
Metal Cold Air Faces
Wood Cold Air Faces
Round Furnace Pipe
Single Wall Pipe
Double Wall Pipe
Registers and Fittings
Furnace Regulators
Revolving Chimney Tops
Cast Iron Smoke Pipe
Furnace Cement
Damper Quadrants
Chain and Pulleys
Asbestos Paper
Asbestos Mill Board

THE J. M. & L. A.
OSBORN Co
CLEVELAND
"EVERYTHING USED IN SHEET METAL WORK"

The NEW IMPROVED "STANDARD"
ROTABLE VENTILATOR

"Standard" Ventilator and Chimney Cap—Most Efficient Combination on the market.

THIS favorite ventilator has been further improved to insure—
Greater Durability
Quieter Operation
Greater Efficiency
Better Balance

The **New Cone-top Suspension,** new **Bronze Guide Bushings,** and **Cross-Braced Skirt** are the new features.

Let us tell you in detail all about this better ventilator.

Write for special circular and prices today

STANDARD VENTILATOR CO., Lewisburg, Pa.

THIS MEANS SERVICE
B.B. LINE OF SHEET METAL SUPPLIES

CARRIED IN STOCK BY YOUR NEAREST JOBBER INSURING PROMPT SHIPMENT OF QUALITY MATERIAL.

EVERY ITEM OF THE B. B. LINE IN A CLASS BY ITSELF. LOOK FOR THE B. B.

B. B. Conductor Hooks and Gutter Hangers, "SHUR-LOCK" Conductor Pipe, "E-Z Fit" Eaves Trough, "Quaker City" Mitres, Ends, Caps and Outlets. Other items in our No. 10 Catalog.

BERGER BROS. CO.
229 TO 237 ARCH ST. PHILADELPHIA

NEVER MADE WITHOUT THIS
TRADE *F. Dieckmann* MARK

Quality and Service Made 'em Famous

Made of one piece of heavy gauge material, in all styles and angles from 10 to 90 degrees, of 24, 26, 28 ga. ternes, then galvanized after formation.

DIECKMANN
Elbows and Shoes
are the standard of the market and always give satisfaction

Send for new catalogue 26 showing complete line

The Ferdinand Dieckmann Co.
P. O. Station B, Cincinnati, O.

Not made lighter than 28 ga. or 16 oz. copper

Chicago Warehouse Metal and Furnace Supply Prices

AMERICAN ARTISAN is the only publication containing Western Metal, Furnace Supply and Hardware prices corrected weekly.

METALS

PIG IRON

Chicago Fdy., No. 2	$18 50
Southern Fdy. No. 2	23 01
Lake Superior Charcoal	27 04
Malleable	18 50

FIRST QUALITY BRIGHT TIN PLATES

1C	20x28	112 sheets	$25 10
IX	20x28		29 60
IXX	20x28	56 sheets	16 20
IXXX	20x28		17 55
IXXXX	20x28		18 95

TERNE PLATES

			Per Box
IC	20x28, 40-lb.	112 sheets	$26 00
IX	20x28, 40-lb.	112 sheets	28 50
IC	20x28, 25-lb.	112 sheets	21 75
IX	20x28, 25-lb.	112 sheets	24 25
IC	20x28, 20-lb.	112 sheets	20 00
IV	20x28, 20-lb.	112 sheets	22 50
IC	20x28, 15-lb.	112 sheets	18 50

"ARMCO" INGOT IRON PLATES

No. 8 ga. up to and including ¼ in.—100 lbs. $4 55

COKE PLATES

Cokes, 80 lbs., base, 20x28	$13 60
Cokes, 90 lbs., base, 20x28	13 80
Cokes, 100 lbs., base, 20x28	14 00
Cokes, 107 lbs., base, IC 20x28	14 30
Cokes, 135 lbs., base, IX 20x28	16 40
Cokes, 155 lbs., base, 56 sheets	9 20
Cokes, 175 lbs., base, 56 sheets	10 05
Cokes, 195 lbs., base, 56 sheets	20 90

BLUE ANNEALED SHEETS

Base 10 ga. per 100 lbs.	$3 50
"Armco" 10 ga. per 100 lbs.	4 00

ONE PASS COLD ROLLED BLACK

No. 18-20 per 100 lbs.	$3 75
No. 22 per 100 lbs.	3 90
No. 24 per 100 lbs.	3 95
No. 26 per 100 lbs.	4 05
No. 27 per 100 lbs.	4 10
No. 28 per 100 lbs.	4 20
No. 29 per 100 lbs.	4 25
No. 30 per 100 lbs.	4 45

"ARMCO" GALVANIZED

"Armco" 24 per 100 lbs. $6 15

GALVANIZED

No. 16 per 100 lbs.	$4 30
No. 18 per 100 lbs.	4 45
No. 20 per 100 lbs.	4 60
No. 22 per 100 lbs.	4 65
No. 24 per 100 lbs.	4 80
No. 26 per 100 lbs.	5 05
No. 27 per 100 lbs.	5 15
No. 28 per 100 lbs.	5 30
No. 30 per 100 lbs.	5 70

BAR SOLDER

Warranted 50-50 per 100 lbs.	$36 50,
Commercial 45-55 per 100 lbs.	33 50
Plumbers per 100 lbs.	30,50

ZINC

In Slabs ..... $ 8 50

SHEET ZINC

Cash Lots (600 lbs.)	$12 00
Sheet Lots	13 00

BRASS

Sheets, Chicago base	17¾c
Mill base	18c
Tubing, brazed base	26¾c
Wire, base	18¼c
Rods, base	15½c

COPPER

Sheets, Chicago base	22¾c
Mill Base	21¾c
Tubing, seamless base	25¾c
Wire, No. 9, B & S Ga.	18¾c
Wire, No. 10, B & S Ga.	19c
Wire, No. 11, B & S Ga.	19¾c
Wire, No. 8, B & S Ga. and heavier	18½c

LEAD

American Pig	$7 25
Bar	8 25

TIN

Pig Tin per 100 lbs.	$65 50
Bar Tin per 100 lbs.	66 50

HARDWARE, SHEET METAL SUPPLIES, WARM AIR FURNACE FITTINGS AND ACCESSORIES.

ASBESTOS

Paper up to 1/16	6c per lb.
Roll board	6¼c per lb.
Mill board 3/32 to ½	6c per lb.
Corrugated Paper (250 sq. ft. to roll)	$6 00 per roll

BRUSHES

Hot Air Pipe Cleaning
Bristle, with handle, each $0 85

Flue Cleaning
Steel only, each 1 25

BURRS

Copper Burrs only 40-5%

CEMENT, FURNACE

American Seal, 5-lb. cans, net	$ 40
American Seal, 10-lb. cans, net	80
American Seal, 25-lb. cans, net	2 00
Pecora ..... per 100 lbs.	7 51

CHIMNEY TOPS

Adams' Revolving	Wt. Doz.	Price Doz.
4 in.	21 lbs.	$11 00
6 in.	24 lbs.	11 50
7 in.	30 lbs.	13 50
8 in.	33 lbs.	15 00
9 in.	51 lbs.	16 50
10 in.	56 lbs.	18 00
12 in.	66 lbs.	22 00
14 in.	110 lbs.	36 00

CLINKER TONGS

Front Rank, each	$0 75
Per doz.	8 40

CLIPS

Damper
Adams No.-Rivet Steel, with tail pieces, per gross $2 00
Tail pieces, per gross 2 50

COPPERS—Soldering

Pointed Roofing

3 lb. and heavier per lb.	40c
2½ lb. per lb.	45c
2 lb. per lb.	48c
1½ lb. per lb.	55c
1 lb. per lb.	60c

CORNICE BRAKES

Chicago Steel Bending
Nos. 1 to 6B ..... Net

CUT-OFFS

Gal., plain, round or cor. rd.
26 gauge 30%
28 gauge 35%

DAMPERS

"Yankee" Hot Air
7 inch, each 20c, doz. $1 75
8 inch, each 25c, doz. 2 40
9 inch, each 30c, doz. 2 75
10 inch, each 32c, doz. 3 00

Smoke Pipe
7 inch, each $0 35
8 inch, each 40
9 inch, each 50
10 inch, each 60
12 inch, each 90

ADAMS No. 1 CHECK

Check and Collar Complete
8 inch, each 2 00
9 inch, each 2 25

End Check Only
8 inch, each 1 40
9 inch, each 1 85

Collar Only
8 inch, each 50
9 inch, each 65

No. 2 CHECK

8 inch, each 1 00
9 inch, each 1 00

10% Disc. on Adams No. 1 and No. 2 Check

Diamond Smoke Pipe
7 inch, doz. ..... $ 2 00
8 inch, doz. 3 20
9 inch, doz. 4 80
10 inch, doz. 6 00

Adams' Sheet Metal
7 inch, doz. ..... $ 1 60
8 inch, doz. 2 20
9 inch, doz. 2 60
10 inch, doz. 3 80
12 inch, doz. 3 50
14 inch, doz. 5 00

DIGGERS

Post Hole
Iwan's Split Handle (Eureka)
4-ft. Handle ..... per doz. $14 00
7-ft. Handle ..... per doz. 36 00
Iwan's Hercules pattern, per doz. 14 90

EAVES TROUGH

Galv. Crimpedge, crated 75 & 5%
Zinc, "Barnes" 60%

ELBOWS

Conductor Pipe
Galv. plain or corrugated, round flat Crimp.
28 Gauge 60%
26 Gauge 45%
24 Gauge 15%

Galv. & Terne Steel
Plain Rd. and Rd. Corr.:
28 Ga. 60%
26 Ga. 45%
24 Ga. 15%

Square Corrugated
No. 28 Gauge 50%
26 Gauge 35%

Portico Elbows
Standard Gauge Conductor Pipe, plain or corrugated.
Not nested ..... 70 & 5%
Nested solid ..... 70 & 5%

Sq. Corr., A. & B. & Octagon
28 Ga. 50%
26 Ga. 35%

Portico
1", 1¼", 1½" 45%

Copper
16 oz., all designs 50%

Zinc—
All styles 60%

ELBOWS—Stove Pipe

1-piece Corrugated. Uniform Blue "Milcor" No. 28 Gauge.	Doz.
5-inch	$1 05
6-inch	1 20
7-inch	1 75

Special Corrugated

6-inch	$1 00
7-inch	1 60

Adjustable—Uniform Blue

"Milcor" No. 28 Gauge. Uniform Blue.	
5-inch	$1 65
6-inch	1 75
7-inch	2 10

WOOD FACES—50% off list.

FENCE

726-6-12½% (100 rods) $28 68
1048-6-14½% (100 rods) 43 62

FILES AND RASPS

Heller's (American)	50-10%
American	60-10%
Arcade	50%
Black Diamond	50%
Eagle	50%
Great Western	50%
Kearney & Foot	50%
McClellan	50%
Nicholson	50%
Simonds	60%

FIRE POTS

Clayton & Lambert's
East of west boundary line of Province of Manitoba, Canada, No. Dakota, So. Dakota, Nebraska, Kansas, Oklahoma, Amarillo, San Angelo and Laredo, Texas 52%
West of above boundary 48%

Geo. W. Diener Mfg. Co. Ea.
No. 02 Gasoline Torch, 1 qt. ..... $ 5 55
No. 0350, Kerosene, or Gasoline Torch, 1 qt. 7 50
No. 10 Tinner's Furn. Square tank, 1 gal. 12 60
No. 15 Tinner's Furn. Round tank, 1 gal. 12 00
No. 21 Gas Soldering Furnace 3 60
No. 110 Automatic Gas Soldering Furnace 10 50

Double Blast Mfg. Co.
Gasoline, Nos. 25 and 36 ..... 60%

Quick Meal Stove Co.
Vesuvius, F. O. B. St. Louis 30%
(Extra Disct. for large quantities.)

GALVANIZED WARE

Pails (Galv. after made), 10-qt. $2 12
Tubs (Galv. after made).
No. 1 ..... 6 00
No. 2 ..... 6 35

GLASS

Single Strength, A, 25-in. brackets	87%
Single Strength, A, 24 to 40-in. bracket	86%
Single Strength, A, all other brackets	89%
Double Strength, A, all sizes	86%

HANGERS

Conductor Pipe
Milcor Perfection Wire 25%
Milcor Triplex Wire 10%

Eaves Trough
Milcor Steel (galv. after forming) List ..... plus 12½%
Milcor Selflock E. T. Wire, List ..... plus 50%

HOOKS

Box
V. & B. No. 1, each $0 26

Conductor
"Direct Drive" Wrought Iron for wood or brick .. 15c

Hay
V. & B. No. 1, each $0 26

HUMIDIFIER

"Front-Rank," Automatic
In single lots 50%
In lots of 10 or more 50-5%
In lots of 25 or more 50-10%
Vapor pans, etc., each 50%

LIFTERS

Stove Cover
Coppered ..... per gro. $6 00
Alaska ..... per gro. 4 75

MALLETS

Tinners
Hickory ..... per doz. $2 25

MITRES

Galvanized steel mitres,
28 Ga. 70
26 Ga. 60-30

NAILS

Cut Steel	$4 35
Cut Iron	4 35

Wire

Common	3 95
Cement Coated	3 95

(Continued on Page 178)

A Series

of

Articles

on

Farm Ventilation

Now Appearing

by

Prof. A. J. Mack

Department of Mechanical Engineering

KANSAS STATE AGRICULTURAL COLLEGE

See page 162 this issue for third article

AMERICAN ARTISAN

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ÆOLUS FOR HOMES

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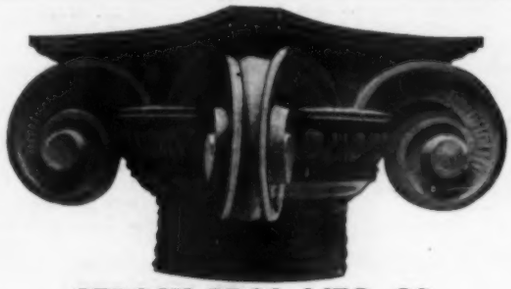

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SHEET METAL ORNAMENTS

AND STATUARY

1252 So. Vandeventer Ave., St. Louis, Mo., U.S.A.

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ADVERTISERS' INDEX

The dash (—) indicates that the advertisement runs on a regular schedule but does not appear in this issue.

A

.....177
Agricola Furnace Co. ..... —
Akrat Ventilators, Inc. 184
American Foundry & Furnace Co. ..... —
American Furnace Co. ..... —
Armco Distributors Assn. of America 154
American Steel & Wire Co....181
Arex Co. 184
Armstrong Co. ..... —
Auditorium Hotel ..... —
Auer Register Co. 151
Automatic Humidifier Co. .... —

B

Barnes Zinc Products Co..... —
Beh & Co. 151
Berger Bros. Co. 175
Berger Co., L. D. ..... —
Bertsch & Co. 179
Brillion Furnace Co..... —
Buckeye Products Co. ..... —
Burgess Soldering Furnace Co.181
Burton Co., W. J. 177

C

Calkins & Pearce ..... —
Central Alloy Steel Corp. .... —
Chicago Elbow Machine Co.... —
Chicago Solder Co..... —
Clayton & Lambert Mfg. Co... —
Cleveland Castings Pattern Co.150
Colburn Heater Co. ..... —
Connors Paint Co., Wm.....150
Copper & Brass Research Association ..... —

D

Davis Co., Herbert H. ..... —
Dieckmann Co., Ferdinand....175
Diener Mfg. Co., Geo. W.....179
Dreis & Krump Mfg. Co..179-181

E

Eaglesfield Ventilator Co..... —

F

Fanner Mfg. Co. 150
Forest City Fdy. & Mfg. Co.. —
Floral City Heater Co. 146
Fort Shelby Hotel ..... —
Friedley-Voshardt Co. 179

G

Gerock Bros. Mfg. Co. 177

H

Harrington & King Perf. Co..177
Hart & Cooley Co. 151
Henry Furnace & Fdy. Co....147
Hess-Snyder Co. 149
Hessler Co., H. E.....181
Hyro Mfg. Co. ..... —

I

Independent Register & Mfg. Co. 151
Inland Steel Co. ..... —
International Heater Co. ..... —

K

Keith Furnace Co. ..... —
Kernchen Co. ..... —
Kirk-Latty Co. 150

L

Lamneck & Co., W. E..... —
Lamson & Sessions Co., The..150
Langenberg Mfg. Co. ..... —
Lennox Furnace Co. ..... —
Liberty Foundry Co. ..... —
Linde Air Products Co..... —
Lupton's Sons Co., David..... —

M

Majestic Co., The ..... —
Marshalltown Mfg. Co.....181
May-Fiebeger Co. ..... —
Merchant & Evans Co. ..... —
Meyer & Bro. Co., F. ..... —
Meyer Furnace Co., The..... —
Milwaukee Corr. Co..... Front and Back Cover
Monitor Furnace Co. ..... —
Mt. Vernon Furn. & Mfg. Co.. —
Mueller Furnace Co., L. J..... —

N

National Heatcraft Institute.. —
New Jersey Zinc Sales Co., The —
Northwestern Stove Repair Co.151

O

Osborn Co., The J. M. & L. A.175

P

Parker-Kalon Corp. ..... —
Peck, H. E. 183
Peck, Stow & Wilcox..... —
Pecora Paint Co. ..... —
Pfeifer, Wm. ..... —
Prest-O-Lite Co., Inc. ..... —

Q

Quick-Meal Stove Co. 181
Quincy Pattern Co. 150

R

Reed Air Filter Co. ..... —
Richardson & Boynton Co..... —
Robinson, A. H., Co. 147
Robinson Furnace Co. ..... —
Rock Island Register Co. .... —
Rudy Furnace Co. ..... —
Rybolt Heater Co. ..... —
Ryerson & Sons, Inc., Jos. T. —

S

Sheet Steel Trade Ex. Comm.. —
Special Chemical Co, ... —
Standard Furn. & Supply Co..146
Standard Ventilator Co. 175
St. Louis Heating Co. 149
St. Louis Tech. Inst.....184
Sturtevant Co. ..... —
Success Heater Mfg. Co. ..... —

T

Taylor Co., N. & G. ..... —
Technical Products Co. ..... —
Teela Sheet Metal Co. 150
The Thatcher Co. ..... —
Thomas & Armstrong Co. ... —
Trachte Bros. Co., Inc..... —
Tuttle & Bailey Mfg. Co..... —
XXth Century Htg. & Vent. Co. ..... —

U

United States Register Co. .... —
Unishear Co., Inc. ..... —
Utica Heater Co. 145

V

Vail Mfg. Co., ... —
Vedder Pattern Works 150
Viking Shear Co. 179

W

Walworth Run Fdy. Co. ..... —
Warm Air Furnace Fan Co.. —
Waterman-Waterbury Co. .... —
Western Steel Products Co.... —
Wheeling Corr. Co. ..... —
Whitney Mfg. Co., W. A.....179
Whitney Metal Tool Co. 179
Wise Furnace Co. 148

Markets—Continued from Page 176

NETTING, POULTRY

Galvanized before weaving 57½-5%
Galvanized after weaving.52½-5%

PASTE

Asbestos Dry Paste:

200-lb. barrel	$16 00
100-lb. barrel	8 75
35-lb. pail	3 50
10-lb. bag	1 10
5-lb. bag	60
2½-lb. cartons	35

PIPE

Conductor
Cor. Rd., Plain Rd., or Sq.

Galvanized
Crated and nested (all gauges) 75-2½%
Crated and not nested (all gauges) 70-15%

Furnace Pipe
Double Wall Pipe and Fittings 60%
Single Wall Pipe, Round Galvanized Pipe 60%
Galvanized and Tin Fittings 60%

Lead
Per 100 lbs.....$12 50

Stove Pipe
"Milcor" "Titelock" Uniform Blue Stove

28 gauge, 5 inch U. C. nested	10 50
28 gauge, 6 inch U. C. nested	11 00
28 gauge, 7 inch U. C. nested	13 00
30 gauge, 5 inch U. C. nested	9 00
30 gauge, 6 inch U. C. nested	10 00
30 gauge, 7 inch U. C. nested	12 00

T-Joint Made up
6-inch, 28 ga....per doz. $ 4 00

All Zinc
No. 11, all styles.....60%

POKERS, STOVE

W'r't Steel, str't or bent, ...per doz.	$0 75
Nickel Plated, coil handles, ...per doz.	1 10

POKERS, FURNACE

Each $0 50

PULLEYS

Furnace Tackle....per doz.	$0 60
.....per gro.	6 00
Furnace Screw (enameled) .....per doz.	75

Ventilating Register

Per gross	9 00
Small, per pair	20
Large, per pair	50

PUTTY

Commercial Putty, 100-lb. Kits $3 40

QUADRANTS

Malleable Iron Damper.....10%

REDUCERS—Oval Stove Pipe

	Per Doz.
7—6, 28-gauge, 1 doz. in carton	$ 2 00

REGISTERS AND BORDERS

Baseboard, Floor and Wall.
Cast Iron 20%
Steel and Semi-Steel.....40%
Baseboard 40%
Wall 40%
Adjustable Ceiling Ventilators 40%

Register Faces—Cast and Steel
Japanned, Bronzed and Plated, 4x6 to 14x14.....40%
Large Register Faces—Cast, 14x14 to 38x42.....60%
Large Register Faces—Steel, 14x14 to 38x42.....65

RIDGE ROLL

Galv., Plain Ridge Roll, b'did 75-10-5%
Galv., Plain Ridge Roll crated 75-10%
Globe Finials for Ridge Roll 50%

ROOFING

	Per Square
Best grade, slate surf. prepared	$ 3 30
Best talc surfaced	2 65
Medium talc surfaced	2 00
Light talc surfaced	1 30
Red Rosin Sheeting, per ton	57 00

SCREWS

Sheet Metal
7, ⅛x⅛, per gross.....$0 52
No. 10, ¾x3/16, per gross. 68
No. 14, ⅞x¼, per gross.. 89

SHEARS, TINNERS' & MACHINISTS'

Viking $22 00

Lennox Throatless
No. 18 .....35%
Shear blades 10%
(f. o. b. Marshalltown, Iowa)

SHIELDS, REGISTER

No. 1 "Gem" floor.....$12 00 doz.
No. 2 "Gem" wall..... 6 00 doz.

SHOES

Galv. 28 Gauge, Plain or corrugated round flat crimp....60%
26 gauge round flat crimp....45%
24 gauge round flat crimp... 1[illegible]

SNIPS, TINNERS'

Clover Leaf .....40 & 10%
National .....40 & 10%
Star 50%
Milcor .....Net

SQUARES

Steel and Iron .....Net
(Add for bluing, $3 per doz. net.)
Mitre .....Net
Try .....Net
Try and Bevel.....Net
Try and Mitre .....Net
Fox's .....per doz. $6 00
Winterbottom's 10%

STOPPERS, FLUE

Common .....per doz. $1 10
Gem, No. 1.....per doz. 1 10
Gem, flat, No. 3....per doz. 1 00

VENTILATORS

Standard .....30 to 40%

WIRE

Plain annealed wire, No. 8 per 100 lbs.	$3 05
Galvanized barb wire, per 100 lbs.	3 90
Wire Cloth—black painted, 12-mesh, per 100 sq. ft....	1 65
Cattle Wire—galvaniz'd catch weight spool, per 100 lbs..	3 65
Galvanized Hog Wire, 80 rod spool, per spool.....	3 15
Galvanized Plain Wire, No. 9, per 100 lbs.	3 40
Stove Pipe, per stone.....	1 10

WRINGERS

No. 790, Guarantee ....each	$5 10
No. 770, Bicycle .....each	4 70
No. 670, Domestic ....each	4 35
No. 110, Brighton ....each	3 70
No. 750, Guarantee ....each	5 10
No. 740, Bicycle .....each	4 70
No. 22, Pioneer .....each	3 40
No. 2, Superb .....each	2 65

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Makers of fine Blow Torches and Fire Pots.
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Widest known—Most universally used

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NEW SKYLIGHT CLOSE CORNER FLANGE PUNCH

Every Sheet Metal Worker Needs One.
Weighs Only 10 Lbs.
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OTHERS FOLLOWING

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or
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W. A. Whitney Mfg. Co.
715 Park Ave.,
ROCKFORD, ILL.

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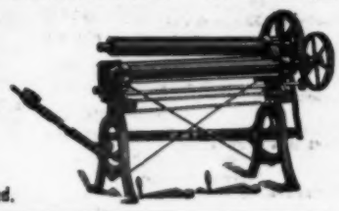

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Lamson & Sessions Co., Cleveland, Ohio
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Copper & Brass Research Association, New York

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Lupton's Sons Co., David, Philadelphia, Pa.
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New Jersey Zinc Sales Co., The, New York, N. Y.
Wheeling Corrugating Co., Wheeling, W. Va.

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Dieckmann Co., Ferdinand, Cincinnati, Ohio
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American Steel & Wire Co., Chicago, Ill.

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Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Flue Thimbles.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

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Pecora Paint Co., Philadelphia, Pa.

Furnace Cement—Liquid.
Technical Products Co., Pittsburgh, Pa.

Furnace Cleaners—Suction.
Brillion Furnace Co., Brillion, Wis.
Sturtevant Co., B. F., Boston, Mass.

Furnace Fans.
A. H. Robinson Company, Massillon, Ohio
Robinson Furnace Co., Chicago
Sturtevant Co., B. F., Boston, Mass.
Warm Air Furnace Fan Co., The, Cleveland, Ohio

Furnace Rings.
Milwaukee Corrugating Co., Milwaukee, Wis.
Walworth Run Fdy. Co., Cleveland, Ohio

Furnaces—Gas.
Calkins & Pearce, Columbus, Ohio

Furnaces—Warm Air.
Agricola Furnace Co., Gadsen, Ala.
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American Foundry & Furnace Co., Bloomington, Ill.
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Calkins & Pearce, Columbus, Ohio
Colburn Heater Co., Chicago, Ill.
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Henry Furnace & Fdy. Co., Cleveland, Ohio
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Keith Furnace Co., Des Moines, Ia.
Lamneck Co., W. E., Columbus, Ohio
Langenberg Mfg. Co., St. Louis, Mo.
Lennox Furnace Co., Marshalltown, Ia.; Syracuse, N. Y.
Majestic Co., The, Huntington, Ind.
May-Fiebeger Furnace Co., Newark, Ohio
Meyer Furnace Co., The Peoria, Ill.
Monitor Furnace Co., Cincinnati, Ohio
Mt. Vernon Furnace & Mfg. Co., Mt. Vernon, Ill.
Mueller Furnace Co., L. J., Milwaukee, Wis.
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Robinson Furnace Co., A. H., Massillon, Ohio
Robinson Furnace Co., Chicago, Ill.
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Success Heater Mfg. Co., Des Moines, Iowa
Thomas & Armstrong Co., London, Ohio
Thatcher Co. Chicago, Ill.
XXth Century Heating & Ventilating Co., Akron, Ohio
Utica Heater Co., Utica, N. Y.
Waterman-Waterbury Co., Minneapolis, Minn.
Western Steel Products Co., Duluth, Minn.
Wise Furnace Co., Akron, Ohio

Garages—Metal.
The Thomas & Armstrong Co., London, Ohio

Gas (Acetylene) Dissolved.
Prest-O-Lite Co., Inc., New York, N. Y.

Gas (Nitrogen).
Linde Air Products Co., New York, N. Y.

Gas (Oxygen).
Linde Air Products Co., New York, N. Y.

Glass—Wire.
Lupton's Sons Co., David, Philadelphia, Pa.

Grilles.
Auer Register Co., Cleveland, Ohio
Harrington & King Perforating Co., Chicago, Ill.
Hart & Cooley Co., New Britain, Conn.
Independent Reg. Co., Cleveland, Ohio
Tuttle & Bailey Mfg. Co., Chicago, Ill.
United States Register Co., Battle Creek, Mich.

Grilles—Store Front.
Tuttle & Bailey Mfg. Co., Chicago, Ill.

Guards—Machine and Belt.
Harrington & King Perforating Co., Chicago, Ill.

Handles—Boiler.
Berger Bros. Co., Philadelphia, Pa.

Handles—Soldering Iron.
Hyre Mfg. Co., New York, N. Y.

Hangers—Eaves Trough.
Berger Co., L. D., Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Heaters—Cabinet.
Majestic Co., The, Huntington, Ind.
Mueller Furnace Co., L. J., Milwaukee, Wis.
Waterman-Waterbury Co., Minneapolis, Minn.

Heaters—Gas.
Calkins & Pearce, Columbus, Ohio

Heaters—School Room.
Floral City Heater Co., Monroe, Mich.
International Heater Co., Utica, New York
Meyer Furnace Co., The, Peoria, Ill.
L. J. Mueller Furnace Co., Milwaukee, Wis.
Standard Furnace & Supply Co., Omaha, Neb.
Waterman-Waterbury Co., Minneapolis, Minn.

Hooks—Conductor.
Berger Co., L. D., Philadelphia, Pa.

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Auditorium Hotel, Cleveland
Fort Shelby Hotel, Detroit, Mich.

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L. J. Mueller Furnace Co., Milwaukee, Wis.
Robinson Furnace Co., Chicago, Ill.

Lath—Expanded Metal.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Machines—Crimping.
Bertsch & Co., Cambridge City, Ind.

Machinery—Culvert.
Bertsch & Co., Cambridge City, Ind.

Machines—Tinsmiths.
Bertsch & Co., Cambridge City, Ind
Burton Co., The W. J., Detroit, Mich.
Chicago Elbow Machine Co., Oak Park, Ill
Dreis & Krump Mfg. Co., Chicago, Ill.
Marshalltown Mfg. Co. Marshalltown, Iowa
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peck, Stow & Wilcox Co., Southington, Conn
Ryerson & Son, Inc., Jos. T., Chicago, Ill.
Unishear Co., Inc., New York, N. Y.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.

Mandrels.
Hyre Mfg. Co., New York, N. Y

Metals—Perforated.
Harrington & King Perforating Co., Chicago, Ill.

Miters.
Friedley-Voshardt Co., Chicago, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Miters—Eaves Trough.
Barnes Zinc Products Co., Chicago, Ill.
Lupton's Sons Co., David, Philadelphia, Pa.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

Nails—Hardened Masonry.
Parker-Kalon Corp., New York, N. Y.

Nails—Wire.
American Steel & Wire Co., Chicago, Ill.

Nitrogen (Gas).
Linde Air Products Co., New York, N. Y

Ornaments—Sheet Metal.
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Gerock Bros. Mfg. Co., St. Louis, Mo.
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Oxygen (Gas).
Linde Air Products Co., New York, N. Y

Paint.
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Henry Furnace & Fdy. Co., Cleveland, Ohio
Lamneck Co., W. E., Columbus, Ohio
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City
Mueller Furnace Co., L. J., Milwaukee, Wis
Osborn Co., The J. M. & L. A., Cleveland, Ohio
Robinson Furnace Co., Chicago, Ill.
Standard Furnace & Supply Co., Omaha, Neb.

Pipe and Fittings—Stove.
Meyer & Bro. Co., F., Peoria, Ill.
Milwaukee Corrugating Co., Mil., Ch'go, La Crosse, Kan. City

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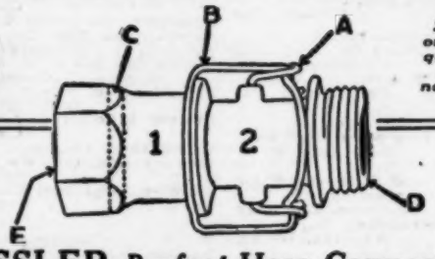

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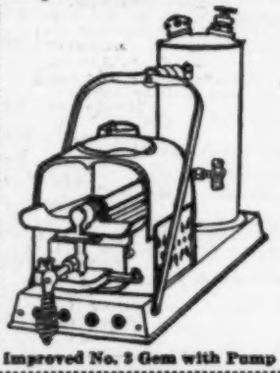

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Thatcher Co., Newark, N. J.

Ranges—Gas.
Quick Meal Stove Co., St. Louis, Mo.

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Taylor Co., N. & G., Philadelphia, Pa.
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Double-Duty Elbow Co., Aurora, Ill.
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Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Double Blast Mfg. Co., North Chicago, Ill.
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Quick Meal Stove Co., St. Louis, Mo.

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Osborn Co., The J. M. & L. A., Cleveland, Ohio
Peck, Stow & Wilcox Co., Southington, Conn.
Ryerson & Son, Inc., Jos. T., Chicago, Ill.
Viking Shear Co., Erie, Pa.
Whitney Mfg. Co., W. A., Rockford, Ill.
Whitney Metal Tool Co., Rockford, Ill.

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Burgess Soldering Furnace Co., Columbus, Ohio
Clayton & Lambert Mfg. Co., Detroit, Mich.
Diener Mfg. Co., G. W., Chicago, Ill.
Quick Meal Stove Co., St. Louis, Mo.
Ryerson & Son, Inc., Jos. T., Chicago, Ill.

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Sheet Steel Trade Extension Committee, Pittsburgh, Pa.

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Akrat Ventilators, Inc., Chicago, Ill.
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Tuttle & Bailey Mfg. Co., New York
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American Steel & Wire Co., Chicago, Ill.

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Zinc.
Merchant & Evans Co., Philadelphia, Pa.
New Jersey Zinc Co., The, New York, N. Y.

WANTS AND SALES

Yearly subscribers to the AMERICAN ARTISAN may insert advertisements of not more than fifty words in our Want and Sales Columns WITHOUT CHARGE.

Such advertisements, however, must be limited to help or situation wanted, tools or equipment for sale, to exchange or to buy, business for sale or location desired. This privilege is not extended to manufacturers or jobbers—or those making a business of buying and selling used machines, employment agencies and brokers.

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Lightning Rods—Dealers who are selling Lightning Protection will make money by writing to us for our latest Factory to Dealer Prices. We employ no salesmen and save you all overhead charges. Our Pure Copper Cable and Fixtures are endorsed by the National Board of Fire Underwriters and hundreds of dealers. Write today for samples and prices. L. K. Diddie Company, Marshfield, Wisc.

For Sale—Half interest in well established sheet Metal Shop. Furnace work a specialty. Using Standard Code. 6,000 population, 180 miles west of Minneapolis. $1,200.00 and man needed to take charge of business. Address Q-462, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago.

For Sale—Radiator shop, fully equipped, in town of 8,000 population. Business can be learned in a short time. Large territory to draw from. Rent $8.00 per month. Will sell cheap if taken at once. Address John Doll, 201 East 2nd Ave., St. Charles, Ill. t462

Sheet Metal & Plumbing Shop for Sale—In central U. S. town of 4,500 population. Good business and good reason for selling. Address A462, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

For Sale—An established furnace installation business in Grand Rapids, Michigan. Will sell at inventory. Small down payment required. Address Z461, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

SITUATION WANTED

For Sale—First-class sheet metal workshop—well equipped, clean stock, fine building and lot. Doing very good business. One 7-room modern residence, all in city of Northwestern Ohio. Price $12,000.00. Selling on account of poor health. Act quick. Address J-460, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

Young man 40 years of age. Sheet metal, stove and furnace man wishes to get in line with some good concern as traveling salesman for the coming year. Address S-461, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

Position Wanted—By good all around sheet metal and furnace man. Can handle plumbing, lay out own work. Only steady job considered. 18 years' experience. Write H462, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago, Ill.

Position Wanted—By pattern and template maker. I am also a sheet metal worker. Qualified to take charge of work and handle men. Address S-462, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

SITUATION WANTED

Situation Wanted—Salesman with eighteen years in the stove and furnace field is available for proposition for 1928. Has had both traveling and inside office experience with two of the largest manufacturers in their respective fields. Age 34, good references, married and reliable. Wisconsin territory preferred. Address Q-460, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago.

Situation Wanted—By man thoroughly familiar with sheet metal and sheet metal products. Capable of handling correspondence, purchasing and general office work. Would also consider sales position as I am well acquainted with the trade in Chicago and vicinity. Address R460, AMERICAN ARTISAN, 620 So. Michigan Avenue, Chicago.

Situation Wanted—By a practical all around tinner with 25 years' experience at the trade. Can take charge and run shop. Prefer a general job shop. Can figure on work and lay out and erect same. Can come at once. Would prefer a shop with a hardware store. Address P. S. McGuffin, Inkster, Mich. K462.

Position Wanted—With some good furnace company, by married man of good habits. 25 years' practical experience in all branches of the warm air and fitting business. Last 6 years as superintendent of fitting and metal department for large company. Address J462, AMERICAN ARTISAN, 620 So. Michigan Av., Chicago.

Position Wanted—By capable foreman, sheet metal pattern draftsman and worker, also blow pipe experience, as executive or foreman. Can fill position any time. References if required. Address J461, AMERICAN ARTISAN, 620 S. Michigan Avenue, Chicago.

Situation Wanted—By a practical all-around tinner. Can work outside and inside, lay out my own work. I have been at the trade for the past 25 years. Prefer Minnesota or Wisconsin. Address K461, AMERICAN ARTISAN, 620 S. Michigan Avenue, Chicago.

First class all around sheet metal worker and A-1 draftsman wants position as foreman or pattern cutter anywhere in U. S. where ability is appreciated. State proposition in first letter. Address R-462, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago.

HELP WANTED

Wanted—Experienced furnace salesman for South Dakota. One who understands figuring of pipe furnaces according to the Standard Code. One who also sells Ranges, Cabinet Heaters and Pipeless Furnaces. Straight salary proposition. Address L-462, AMERICAN ARTISAN, 620 South Michigan Avenue, Chicago, Illinois.

Salesman and Estimator—For Sheet Metal Work. One who understands planning and laying out Standard Code jobs. Good opening for man who can get the business. Address G462, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago.

Wanted—At once, all around man to do sheet metal and some plumbing such as comes in a country shop. Wages $30.00 per week year around. Address O. L. Doward, Box 115, Mt. Morris, Ill. G461

TINNERS' TOOLS

FOR SALE.

1—30" Niagara forming rolls.
1—Niagara Crimper and beader with base.
1—Niagara turner with base.
1—Hollow mandrel stake.
1 set slater's tools, hammer, ripper stake.
1 pair large gutter tongs.
1 pair large roofing tongs.
1—4-ft. steel straight edge.

Will sell separately or together. What is your offer? Address A-461, AMERICAN ARTISAN, 620 So. Michigan Ave., Chicago.

For Sale — One 8-foot double truss (used) cornice brake; $75.00 f. o. b. Fond du Lac. Will bend 16 gauge, 8 ft. long. Address Jacob Brenner, 45 3rd St., Fond du Lac, Wis. R461

Wanted—One 30 inch square shears, in good condition, with attachments. Lowest cash price, F. O. B. L. E. Aitken, 112 West 6th Street, Muscatine, Ia. F461.

SPECIAL NOTICES

The Rate for Special Notices — displayed want ads — $3.00 per inch per insertion

When sending copy state whether your name or blind number is to be used—also how many insertions are desired.

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PARTNER WANTED—

We have a well established furnace business in an urban center of 250,000 population and need a partner to assume full management. If he has a record of having made profits in the furnace business and is willing to install according to the Standard Code or better, he can acquire full half interest without any capital as we have plenty of capital to handle a business of 600 or 700 jobs per year. Address T461, American Artisan, 620 South Michigan Avenue, Chicago, Illinois.

WE WANT TO MEET A SHEET METAL WORKER OF A CERTAIN TYPE—

Somewhere in Northern Illinois or Southern Wisconsin—there is a sheet metal worker who is sick and tired of being the under-dog—and ready right now to strike out in the FURNACE business for himself. He is primarily interested in the STANDARD CODE and knows how to use it and why.

He is honest—thrifty enough to have a home and bank account—and a worker.

If you think you are that man—if you are ready to step off into a business of your own—write and tell us fully and frankly about yourself.

Address Y461, care American Artisan, 620 South Michigan Avenue.

FOR SALE

Chicago steel brake, 10 ft., 14 guage. Cost $420.00, will sell for $275.00. 1 No. 10½ Beloit combination punch and shears, cost $430.00, will sell for $200.00; 1 heavy grinder, cost $110, will sell for $60.00; 1 acetylene cutting and welding outfit. ⅓ cash, balance sight draft. Address William D. Lhorbe, Oregon, Ill. M462

WANTED

Experienced up-to-date furnace salesman for Western Pennsylvania and Western New York, preferably one familiar with that territory. The Michigan Stove Company, Detroit, Mich. B-462

HEATING ENGINEER

Heating Engineer—Manufacturer of established line of warm air heating apparatus wants experienced heating engineer to design, estimate and supervise installation of furnace fan blast heating systems for various types of buildings. Give full particulars in first letter. Address F462, American Artisan, 620 South Michigan Avenue, Chicago, Illinois.

Radiator Repairmen's Tools and Supplies
Write for Catalogue
F. L. Curfman Mfg. Co., Maryville, Mo.
Q461

SPECIAL NOTICES

WANTED COMMISSION SALESMEN

Owing to a large increase in capacity The Excelsior Steel Furnace Company, 118 S. Clinton St., Chicago, wishes to engage several additional commission salesmen. The Excelsior line is one of the largest and most complete made, embracing Furnaces, Furnace Pipe, Stove Pipe and Furnace accessories, all of the highest quality. Branches and distributors located in important cities enable the company to supply its products promptly to dealers in all parts of the country. The line is easy to sell as dealers prefer Excelsior goods which, though superior in every respect, are sold at competitive prices. Apply immediately as territory is to be assigned in the near future.

X459

A SEASONED SALES EXECUTIVE

with 20 years experience seeks new opportunity. Successful record. A constructive thinker, with initiative, is prepared to assume complete charge of sales and promotional work, for a manufacturer of a quality product. Clientele embraces, hardware, furnaces, plumbing and heating and sheet metal trades in the central west. Married. References, including banks, upon request. Address O460, American Artisan, 620 So. Michigan Ave., Chicago, Ill.

FURNACE FITTINGS FOREMAN

Attractive opportunity in central west factory, making galvanized and tin furnace fittings, for capable foreman. Should be pattern draftsman, accuracy essential. Able to make fittings and to instruct help in efficient production at lowest cost. Write in confidence, giving age, present location, and occupation, experience in furnace fittings, and state when available for new opening. Address P460, American Artisan, 620 So. Michigan Ave., Chicago, Ill.

AREX

Original Siphonage Ventilator

The Power Fans Only Rival!

200,000 Perfect Installations!

Write for prices today

AREX COMPANY 1581 Conway Bldg. CHICAGO

SPECIAL NOTICES

WANTED

Canadian Warm Air Furnace Manufacturer with efficient Sales Organization from coast to coast would like to get in touch with United States Manufacturer making lines salable to Heating and Sheet Metal Trad and seeking Canadian market. Having large, up-to-date Manufacturing facilities we can, if necessary, manufacture in Canada at lower cost. Address E-462, American Artisan, 620 South Michigan Avenue, Chicago, Ill.

FOR SALE

1 No. 146 Bliss Automatic Double Edging Machine with T. & L. Pulleys and suitable for Blanks 28" in length and 10 to 24" in width. No. 26 gauge stock. 1 Bliss Stove Pipe Forming Machine with T. & L. Pulleys to form Blanks to 4 to 7" diameter and 24 and 30" in length. Address The Wright Mfg. Co., 99-107 Water Street, New Haven, Conn.

O462

Executive Open for Position

Executive with broad experience and successful record desires new connection. Conversant with manufacturing, installation, distribution and sale of plumbing, heating and warm air furnaces. Will consider position with Chicago Manufacturer or as Chicago Distributor. Have had but two connections in twenty years. Address P462, American Artisan, 620 So. Michigan Ave., Chicago, Ill.

Pat. Applied For

TEST ITS PULLING POWER AND NOTICE ITS EFFICIENCY—

A quality product, simple in design and accurate in detail.

Write for Information and Prices.

AKRAT VENTILATORS, INC.

1191 Builders Bldg. CHICAGO

SPECIAL NOTICES

FOR SALE

One 8-foot, 18-gauge Dreis & Krump Cornice Brake and one 10-foot, 18-gauge Dreis & Krump Cornice Brake practically good as new. One 30-inch Squaring Shear—one 42-inch Squaring Shear and 10-ft. Squaring Shear, 18-gauge capacity. Complete set of automatic Back Gauges. Phone Sutherland, So. Chicago, 7600—1546 East 60th Street, Chicago. C-462

WANTED

Reliable Salesman now calling on the Hardware and Furniture trade to sell a very popular full porcelain coal range. Price reasonable and big repeater. Territory open —Ohio, Michigan, Pennsylvania, Virginia, West Virginia, North and South Carolina. Liberal commission. Address Rock Island Stove Company, Rock Island, Illinois. D-462

WANTED SALESMAN

to sell high class steel furnace. One with following. Salary, expenses and bonus. Several territories open. Address Colburn Heater Company, 1955 N. Long Avenue, Chicago, Ill.

O461

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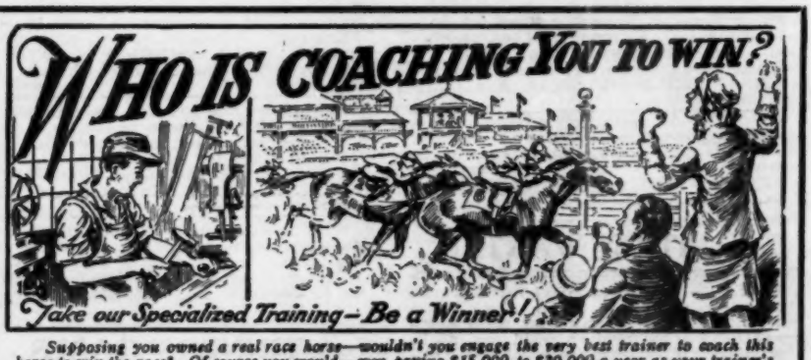
We have a fine territory open for an exceptional salesman and we are willing to pay what a good man is worth. Do not answer unless you can show a sales record above the average as well as a thorough knowledge of the furnace business. Address Lennox Furnace Company, Inc., Syracuse, New York. P461

SALESMAN—

An established manufacturer of warm air furnaces (Cast Iron) seeks a salesman for Chicago and northern Illinois territory. Must be a producer accustomed to better than the average earning power. In your reply please fully cover past experience, and indicate salary expected. Address W461, American Artisan, 620 South Michigan Avenue, Chicago, Illinois.

WELL KNOWN TRADE MARK WARM AIR FURNACE

manufacturer requires three high grade heating salesmen to complete 1928 staff. Territories Michigan, Indiana, and Illinois, outside of Cook County. Substantial salary guaranteed, also commission beyond quota. Address Z460, American Artisan, 620 So. Michigan Avenue, Chicago, Ill.



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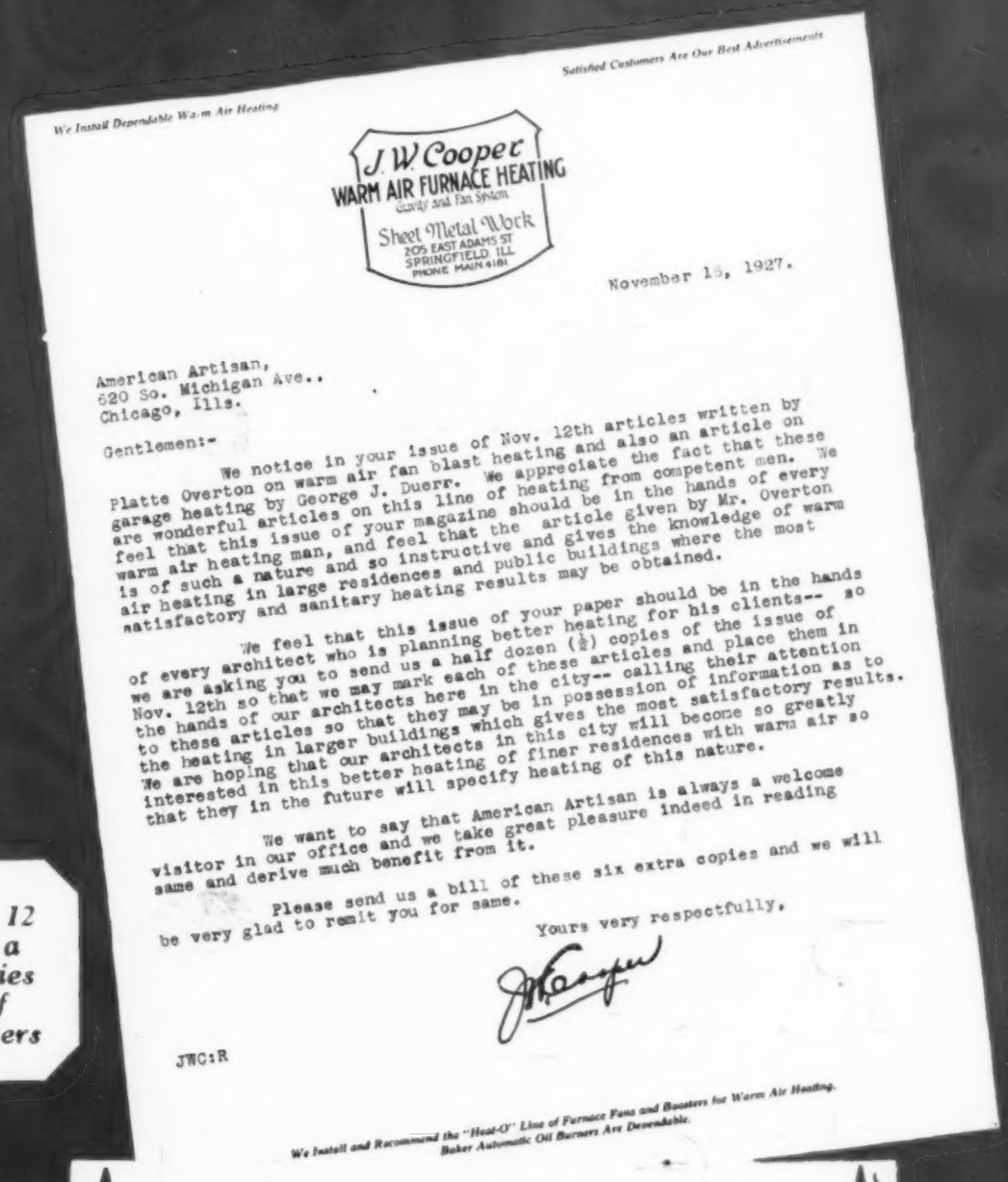

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WARM AIR FURNACE HEATING
Gravity and Fan System
Sheet Metal Work
205 EAST ADAMS ST
SPRINGFIELD, ILL.
PHONE MAIN 4181

November 15, 1927.

American Artisan,
620 So. Michigan Ave..
Chicago, Ills.

Gentlemen:-

We notice in your issue of Nov. 12th articles written by Platte Overton on warm air fan blast heating and also an article on garage heating by George J. Duerr. We appreciate the fact that these are wonderful articles on this line of heating from competent men. We feel that this issue of your magazine should be in the hands of every warm air heating man, and feel that the article given by Mr. Overton is of such a nature and so instructive and gives the knowledge of warm air heating in large residences and public buildings where the most satisfactory and sanitary heating results may be obtained.

We feel that this issue of your paper should be in the hands of every architect who is planning better heating for his clients-- so we are asking you to send us a half dozen (½) copies of the issue of Nov. 12th so that we may mark each of these articles and place them in the hands of our architects here in the city-- calling their attention to these articles so that they may be in possession of information as to the heating in larger buildings which gives the most satisfactory results. We are hoping that our architects in this city will become so greatly interested in this better heating of finer residences with warm air so that they in the future will specify heating of this nature.

We want to say that American Artisan is always a welcome visitor in our office and we take great pleasure indeed in reading same and derive much benefit from it.

Please send us a bill of these six extra copies and we will be very glad to remit you for same.

Yours very respectfully,

J. W. Cooper

JWC:R

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Baker Automatic Oil Burners Are Dependable.

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